Sales
Engineering

Sales Engineering

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Preface

Machinery, equipment, and technical products have value only when put to profitable use. Application engineering and selling are the job of the sales engineer. He holds a key position of steadily increasing importance in our industrial society. His engineering and business skill are essential to all forms of achievement by mechanized procedure.

The work of the sales engineer is often neither understood nor appreciated. Yet its importance equals that of finance, design, or production. Besides a need for further understanding of his work, there is also a need for more intelligent and skilled performance.

The chief purpose of this book is twofold. First, to inform the younger technically trained or engineering graduate of the character of work done by the sales engineer and the opportunities that exist for his services. Second, to help the large army of technical men engaged either in selling or supervising distribution and sales, by raising their sights and improving their skill.

Besides these two groups to whom this book is primarily directed, there are many executives or engineers engaged in design, production, or counselling who will benefit by obtaining a clear picture of distribution and selling, because they, too, serve markets and customers.

Besides attempting to outline successful methods to be followed in selling machinery, equipment, and technical products, there have been included in this book serious suggestions that may help the sales engineer develop greater usefulness as an individual.

In this second edition the text has been rearranged and in many instances expanded. Several practical examples dealing with improved techniques have been added.

A number of helpful comments and suggestions have been received in making this revision. These I gratefully acknowledge. Particularly valuable have been the criticisms of Victor J. Kropf of Pittsburgh, Pa., and the constant and faithful help of my secretary, Mrs. Thomas Lee of Maplewood, N. J.

BERNARD LESTER

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PART ONE
The Field of Sales Engineering

Sales Engineering Defined

Sales engineering is the art of selling equipment and services that require engineering skill in their selection, application, and use.

Engineering skill has been associated largely only with design and production. Planning a design and then completing its fabrication or construction are steps that have human appeal. The results are clear to the eye, and the accomplishment has drama. Yet the whole procedure of production depends upon orders from customers or a waiting market. Unless the fruits of design and production are put to work—are sold—our whole economy is baseless. Orders must be created. Though you cannot see an order being made, the process is nonetheless real. Nor is it less subject to careful systematic planning and execution. In the last analysis the sales engineer is a designer and fabricator of orders. This often involves a high degree of technical knowledge and a knowledge of economy. His ability to create orders makes possible and supports both design and production.

The work of the sales engineer is often confused with that of the popular merchandising salesman. Whereas the sales engineer is hopelessly lost without an abundance of technical knowledge dealing with a process or an industry, the clever merchandise salesman can shift his skill from one simple product to another without too much preparation. His skill is largely dependent upon promotional and sales ability.

However, to be successful, the sales engineer must understand the selling procedure basic to the sale of merchandise. He must have the ability to demonstrate the product he sells and persuade and convince the prospect that it will fill his needs.

The sales engineer is concerned very largely with those material facilities that are employed to create other products or forms of

service. Consequently his attention is attracted to the many phases of industrial activity, such as manufacture, mining, construction, and the furnishing of such services as transportation and power. He looks largely to industrial enterprises as a market for the technical products and services that he sells.

To do a thorough job the sales engineer must use his technical skill to reach an economic result. In doing so he must apply not only technical laws but also business principles. His work combines the skill of an engineer and that of a business man. Beyond this come an understanding of people and their reactions and an ability to demonstrate, persuade, and convince.

The sales engineer views the problems he encounters in selling with the combined vision of a "technical" eye and a "business" eye; he reaches his conclusions and determines his course of action by a process of keen observation and by evaluating what he sees on the basis of economic and technical factors. These two eyes are always focused in a search to find the best and cheapest way of accomplishing a desired result the fruits of which can be attained through the use of the products and services that he as a sales engineer is in a position to furnish.

The work of the sales engineer is distinctly creative, for his efforts are directed to devising ways and means of performing operations more efficiently in the future than they have been performed in the past. Through his combined engineering skill and business insight are formed the keys that open the door to industrial progress. He is instrumental in gaining recognition for new and better operating methods in industry, and consequently he performs a most vital service to society.

From another angle, too, the work of the sales engineer is creative. The constant improvement in all types of apparatus has brought about a condition wherein almost its entire cost-content consists of man-hours. Thus the sales engineer, in reality, is selling human time and skill. With changing social conditions, the sales engineer's work is of increasing importance because he makes employment possible for a large segment of our population.

Let us also remember that, with the increased specialization in all forms of apparatus, production today involves an assembly of

related equipment. The sales engineer not only may sell one or a few types of apparatus but also, to sell them successfully, must be skilled in an assembly of many types. He must be an expert in systems set up to provide for either a specialized or an inclusive productive process in a given field of service.

Sales Engineering in Industry and Trade

To get a clearer picture of where sales engineering fits into the practical affairs of industry today, let us first visualize the vast variety of products we see about us, and tag them according to the way in which they are ordinarily bought and sold. With this picture, and an understanding of the kind of technical effort required of the sales engineer in relation to the various other forms of engineering skill, we can see more clearly where sales engineering plays its important part in industrial progress.

All objects that people trade in and use may be roughly classified either as "durable" goods or as "perishable" goods.

Durable goods are those that last for several years; since they represent a relatively permanent investment, with benefits of a continuing character, they are also commonly called "capital goods."

Perishable goods, on the other hand, are consumed or used within a relatively short period of time, delivering promptly their value in some form of service. Consequently they are frequently also termed "consumption goods."

Durable goods and perishable goods are sold both to corporate concerns and to individuals. Industrial companies, for instance, buy not only durable goods, such as locomotives, cranes and hoists, machine tools, and elevators, but also perishable goods, such as coal

and lubricants. Individuals, likewise, buy not only durable goods, such as houses, furnaces, and mechanical refrigerators, but also food, fuel, and clothing which are soon consumed or used and discarded.

In examining the methods followed in distributing and selling goods we find a rather wide variety. However, two general methods are employed, depending both upon the nature of the product sold and upon the class of purchaser. Goods that are widely used and highly standardized and those that most people know about constitute merchandise and are distributed and sold by merchandising methods. On the other hand, goods that must be fabricated, tailored, or adapted to meet a particular requirement, or those which find their usefulness only in relation to their ability to meet an exact set of conditions existing in industry, are sold by means of technical skill which interprets and applies the goods for the individual buyer.

Most perishable goods fall in the class of merchandise and require a high degree of business and sales skill in their distribution. Certain classes of durable goods, even though they are highly technical in character, also fall into this category. The automobile, mechanical refrigerator, electric-lamp bulb, or twist drill, irrespective of the class of purchaser, are sold largely as merchandise. These are highly standardized, self-contained, and sold from the floor or counter.

However, a great many durable goods required by industry are used for producing other goods or providing suitable conditions under which the production of goods or services can take place efficiently. Machinery and equipment used in every branch of industry fall in this important category. In the distribution and sale of such goods, engineering skill forms a vital and necessary part.

Sales engineering, therefore, finds its field of greatest usefulness in the sale of products that not only are technical in character but also require, as we have seen, a high degree of technical skill in their selection and adaptation to meet special conditions of operation existing in industry.

Although the work of the engineer has in modern times become highly specialized, when we consider the position of the manufacturer who builds products requiring engineering skill in their

distribution, a classification of the principal engineering functions is not difficult. It is not hard to see from such a classification how important a place the sales engineer holds in carrying out industry's productive program. His efforts constitute the necessary link which connects the product to its market.

His work in obtaining incoming business supports all other forms of engineering activity.

Basic technical principles are developed by the *research engineer*. These principles, together with materials, enable the *designing engineer* to develop forms of structures or the scheme of assembly for some object of production. The *manufacturing and construction engineers* actually create or assemble the products in physical form. For any given operating unit, the *purchasing engineer*, whether or not he carries this particular title, selects and acquires what is necessary of a material nature to carry on production, and the *service engineer* exercises his skill in maintaining that which has been produced and put to use.

Objects or services produced are valueless unless exploited, properly applied, and accepted by those who can use them. In this respect *sales engineering*, through avenues of distribution, serves as the essential link between those that produce and those that use.

Sales engineering has, as its principal spheres of activity, the selling of technical equipment and services needed in carrying on the following activities:

Raw materials procurement, such as:

Mining.
Quarrying.
Lumbering.
Oil production.

Manufacturing and processing, such as:

Metal working.
Wood working.
Textile manufacture.
Paper manufacture.
Chemicals manufacture.
Foods manufacture.

Machinery manufacture.
Petroleum refining.

Transportation, such as:

Railroads.
Bus and street cars.
Air.
Marine.

Power and public service:

Electricity.
Gas.
Sanitation.
Water power.
Water supply and control.

Construction, such as:

Public works.
Private.

Specialized processes or services applying to many industrial activities, such as:

Illumination.
Ventilation and air conditioning.
Refrigeration.
Materials handling.
Dust and refuse collection.
Heat treatment—welding.
Painting and finishing.
Water supply.
Power production.

Each of these industrial activities is dependent upon another. Each has its own special problems and processes.

For one industrial producer to sell another, expert knowledge is required not only of what is to be sold but also just how the product or service is to be used.

No one sales engineer can become expert in the technical apparatus peculiar to every industry, nor in the various problems

met by each industry. For instance, many years of experience may be required to become familiar with apparatus sold for making pulp and paper or for generating and distributing electric power. Likewise experience is necessary to understand the exact problems of each of these producers. Thus the work of the sales engineer is directed to one industry or a few associated industries, or to a definite class of problems or processes common to many industries.

Economic Changes and Sales Engineering

Many engineers, who concentrate exclusively on technical problems, fail to grasp the broader meaning of what they do. Without an understanding and appreciation of economic and social principles, their judgment may become stilted and warped.

The sales engineer may easily reach the limit of his usefulness because he is unable to rise to the level of interest of those responsible for planning and directing an industrial enterprise. Concentrating only on the machine or the immediate technical problem, he may fail to assist in developing larger opportunities for the use of his products or services. To be fully successful, the sales engineer must understand business and social trends. When his abilities and vision reach the point at which his help and advice are sought by planners and managers, he truly develops and creates business for the company he represents. He not only gets the thrill of "making a sale" but also has the satisfaction of knowing that that particular sale correctly fits in with a long-range program of development for his customer. He has sold more than apparatus. He has sold even more than his individual skill and knowledge. He has taken one step in estab-

lishing his position as a necessary and invaluable adviser. His efforts have established a relationship—a customer relationship—that may be of even greater future value to his company than the order itself.

Conditions in industry have been changing with the speed and silence of the modern automobile traveling on the highway. Suppose we examine some of these changes. In doing so, we may be able to assist the sales engineer in broadening his viewpoint and position of usefulness.

When our great-grandfathers were young and active, the old American pioneer spirit was starting to find new outlets for its energy. The discovery and development of land, lumber, and minerals, and the development of transportation facilities designed to move products to points of usefulness, had ceased to offer as great possibilities as formerly. The seizing of natural resources scattered geographically over the country became increasingly difficult, and men turned more diligently to a closer examination of what had been found, and what could be done with it. Laboratories multiplied, and experimentation and invention attracted an expanding group of technically trained men. We concentrated our mental processes on devising all sorts of machines with which to span time and space, do away with traditional forms of drudgery, and produce new pleasures. But this was not all; for as soon as we devised new products to build, we set about finding new ways to build them so that they could be made uninterruptedly in large quantities at a very low cost.

Thus we entered an era that has already proved to be unparalleled in the development of technical products and the processes and equipment necessary to produce them at a low cost and in great volume. Mechanization took place on a gigantic scale. With it came new forms of drudgery, many of which we have again set about eliminating. Vast industries, highly mechanized, have been built up not only to produce goods that are rapidly consumed and replaced but also to produce goods in the shape of instruments of production. Such progress has brought about certain economic changes, a recognition of which broadens the horizon of the sales engineer.

The interdependence of companies and plants has vital significance. With the curtailment of production in one plant alone,

many others may be affected. A chain of reactions occurs disastrous to the stability of employment and invested capital.

For instance, one large assembly of machine tools costing hundreds of thousands of dollars is installed to automatically surface and drill the rear axle housing of an automobile in rapid succession. These machines, with required conveyors, are controlled to operate in sequence by a centrally located electric control panel. The failure of one switch, relay, or motor will shut down the process and, if it is not properly corrected, may cause the entire automobile plant to be idle.

Facing every manufacturer are such problems as plant-operating efficiency, the reduction of man-hours, and the avoidance of unemployment. There is always present the apparent conflict between eliminating labor and the creation of employment. Greater efficiency in production and distribution, in the end, increases opportunities for men to work.

Specialization

Obviously, mechanization does not proceed without specialization. Industrial progress goes forward by concentrating man-effort with greater penetration along narrower lines.

Companies are formed and grow, which devote their entire time to a very limited segment of industry's needs. It may be an electric welder, or a patented locknut. Larger corporations set up plants devoted to only one essential process required for a complex product, for example, to draw wire for electrical apparatus or build windshield wipers for automobiles. Each process has become more specialized, as has the equipment required to implement it.

Specialization has brought about a much greater dependence of one industry or activity on another. The market for one product may greatly influence the market for another. A continuing process of production may depend to a large degree on materials and products of another.

In the field of employment and the use of man-hours, the results of specialization have been far reaching. New and vital political, social, and economic problems of challenging importance have arisen.

The sales engineer may develop into a specialist who serves one

industry. He knows its problems and processes. He is expert in the application and sale of specialized machinery and equipment for that industry. However, with the dependence of one industry on another, and in view of the fact that each industry is continually developing new products competing with the old product of another industry, the successful sales engineer must develop a breadth of interest and skill.

Elimination of Labor at the Source

Many people still oppose highly mechanized production systems because, as they say, machines throw men out of work—they destroy labor. It is true that labor is destroyed by substituting the work of a machine for that of a man. However, finished usable products are made more cheaply, in wider variety, and in greater quantities. Work appears at a thousand other points and in other forms.

The classic example of this is the mass production of automobiles. Extensive tooling for making interchangeable parts, together with mass methods of production, has made the modern car possible. Handwork would require many more men to build many fewer cars. But this modern accomplishment has created a wide variety of new jobs and increased others, outside the automobile plant. Glass, rubber, steel, and machine-tool manufacturers bear witness to this, as well as the manufacturers of all forms of supplies necessary to operate the car, and the creators of the country-wide facilities for travel.

On the other hand, many programs of production involving a high degree of specialized effort have been adopted with little consideration of the effect that monotonous routine will have on the individual. Human problems have consequently developed which have affected economic results in production.

Sales engineers engaged in selling machinery and equipment are continually watching for an opportunity to substitute the machine for the man. The specific hand operation is eliminated. But greater production results, and work in other forms is created.

Just as the actual labor required to build a product according to mass-production methods has decreased, so has the amount of capital necessary to provide the instruments of production increased. Originally, a factory was usually little more than an

enclosure to house a group of workmen. The investment was largely in land and buildings. But today, with modern production, these simply provide a resting place and a protection for the all-important items of productive equipment. When management puts up a new factory today, it plans the productive layout first and then builds the structure to suit and house it.

How management invests the stockholders' money in instruments of production, therefore, has become a momentous problem, drawing into the circle a variety of financial institutions. Not only is the wise investment of capital important but also the maintenance of it, and sooner or later the financing of its replacement. The proper selection of equipment and machinery is usually a matter vital to the success of an institution or enterprise, because investment in this direction in greater amounts becomes yearly more necessary, and in character actually less stable.

Failure of an enterprise may come just as much from overmechanization as undermechanization; and the problems of today that face production relate not so much to the availability of those instruments that can be used in production as to their proper selection and use at an advantageous time to produce an economic result commensurate with the investment. Timing becomes a momentous factor. With processes and products undergoing rapid change, often causing methods and equipment soon to become obsolete, decisions must be properly timed and the results must promptly materialize. The sales engineer, as representing the supplier, must be able to respond readily to these important changing conditions.

When management hires a man or woman, it is prepared to pay for service rendered. Aside from such investment as is necessary for training, the individual starts immediately to produce and continues to do so as long as work is available and is satisfactorily done. This is not true of the machine. As long as work is available and the machine itself is suitable, it continues to pay off its original investment; but should available work cease, in idleness it still continues to incur burdensome expenses such as interest on the investment, maintenance, and depreciation. Buying equipment of this sort is like hiring an employee for the rest of his life and paying for a large share of his services in one lump sum with-

out definite knowledge or even reliable statistical information as to how long this employee will be able to work efficiently.

The interest of equipment purchasers centers around wise expenditure of capital under changing conditions of production and market. One important factor in the success of the sales engineer is understanding the problems that surround the purchaser in the wise investment of capital in products and services that the sales engineer can supply. To attain continued success, the sales engineer must assume the viewpoint of the purchaser in the investment of capital—an idea that has been of quite minor importance in the art of selling until recent years.

Thus, with the increasing instability of capital invested in productive equipment, whether it is machine tools, airplanes, railway coaches, or construction machinery, and with the continuous coming into existence of new products, new processes, and new standards of service, values can easily collapse within a few years' time. Obsolescence has hastened its pace. Tomorrow a new machine that perhaps can do the work of several machines replaces old ones long before they become outworn. Only a comparatively small proportion of equipment today has an opportunity before replacement to actually wear out, for it becomes obsolete or "outmoded." Something better becomes available which justifies replacement. In fact the use of obsolete equipment is an actual loss to its owner.

With the continual increase in more complicated and costly facilities to produce, both methods and processes of production have become increasingly shortlived. Permanency and stability in the way productive systems are set up acquire a new meaning. Policies and plans must of necessity become more flexible, with a readiness to meet and capitalize change. Exactly in the same way must our sales methods alter to keep pace with changing economic conditions, calling for the development in the individual of new ideas and abilities.

Thrift Is Now Careful Investing

Grandfather, as a boy, was taught the principle of thrift. When the buggy went wrong it was carefully repaired and took a new lease on life. Only when it was completely worn out came the eventful day of replacement. The new purchase was little dif-

ferent from the old, and the chief advantages were that it was new and shiny and gave no trouble. In those days, anyone not using a thing until it was worn out was considered extravagant and branded as a poor business manager. This principle was as true in the factory as on the farm or in the home. Maintenance was, in itself, a trade for the individual and rivaled production in its importance.

Although saving is still a principle of thrift, wise investing is the secret to progress and profit. *Investing to earn,* therefore, is the new economic principle upon which our business structure progresses. This new philosophy, affecting so vitally the work of the sales engineer, now holds true in all industry to an unprecedented degree. The work of the sales engineer today deals with factual demonstration that investing wisely will improve and decrease the cost of products and services that are created. The coal, water, and lubricants that a manufacturer purchases are expenses. Not so the productive equipment. That is an investment—a capital outlay.

The Sales Engineer as a Consultant

Years ago engineering activities were largely exercised by a small group of professional experts who spread their talents over a variety of work. They often operated independently, being called upon as general consultants as occasion arose, or for the solution of a specific technical problem. Today an increasing amount of engineering work as it relates to most industries is done by the cooperative efforts of engineers employed by the individual enterprise doing the purchasing and engineers in the employ of the suppliers. Engineering activities as they relate to the selection of apparatus have become intimately associated with current purchasing and selling activities. Intelligent purchasing takes place in a pooling of the ideas of those who are to use equipment and of those who expect to supply it. Direct action based upon a common understanding between the two becomes of increasing importance.

These changing conditions have not only increased the importance of the opportunities for the sales engineer, but have directed his effort. He must know both plants and processes. He must not only be expert in the characteristics of the equipment he

advocates, but bring new ideas to those who might use it. Above all, he must be able to work with others as one man on a team. To be successful, in addition to a salesman, he becomes also a cooperative consultant.

Consulting engineers still hold an important place in industry, either to engineer the design of a building, a complete factory, refinery, or power plant; or to engineer some particular phase of productive effort such as a production or cost accounting system.

Production versus Distribution

During the first three decades of the present century, aside from short depressions, production found difficulty in keeping pace with consumption. New products were developed requiring new facilities and forms of production, and these found ample acceptance and ready demand. Little thought was given under such conditions to the importance of efficient distribution by the suppliers of equipment. Industry accepted equipment with open arms in its anxiety to produce. It was only at the close of this period, when the wheels of production were slowing down as the demand for all products fell and we entered what proved to be a major depression, that the need of better and more efficient distribution stared us in the face with such stern reality. In evaluating our position, we found that our skill to produce had outdistanced our skill to distribute efficiently.

The leaders in industry at once directed their attention not so much to producing more, as to finding out more about markets and how to reach them more efficiently. Steps were taken not only to improve products and lower their costs but also to find better and more efficient means of getting products accepted and used in larger volume and particularly how to accomplish this with less expense than formerly. Distribution assumed a position of first importance. Industrial leadership, which before this period had largely been directed by those who were experienced in technical design and manufacture, now fell more into the hands of those who combined commercial skill with engineering ability.

Machines and Men

The results of mechanization upon the individual are even more startling than the economic changes that have taken place. As we

have seen, modern production of almost all kinds has brought together large masses of people for cooperative effort, and the work of the average individual has become more specialized.

When our great-grandfathers started to work, only a small proportion of the population came into contact with technical things. Today, by the time a youngster leaves kindergarten, he has come into contact with all sorts of technical objects. He early observes the airplane, for instance, and eventually he begins to talk about jet propulsion; and thence in the home, store, shop, along the highways, in the fields, and in the sky, a new technical world opens up to him. It is a world where power is applied through mechanization in the performance of old accomplishments in a new way, and of many other entirely new accomplishments.

Today we see everywhere all kinds of technical products. Machinery has had its "coming-out party" and has been introduced to people and accepted. Man associates in an intimate way with machines in the factory, mine, and power house. The machine has been brought into our homes and into every phase of trade and business. With such a changed condition, technical products that were formerly kept in the background and away from the paths of polite society are pointed to with pride and serve to establish higher standards of acceptance in industry and society. Even the kitchen, bathroom, and basement, the mechanical departments of the modern home which were intimate only to the immediate family and shielded from the gaze of visitors, are now thrown open, and, when equipped according to modern skill, even displayed with pride. With all sorts of technical devices placed in intimate contact with men, our psychological attitude toward them has changed enormously. We regard machinery and equipment in a new light, attributing to it characteristics of a social nature. Since our associations have become intimate, we not only can identify machines of various characters but also demand that they conform to higher standards of appearance. We not only become more critical of form and color but also acquire a new sense of beauty; and, besides efficiency, we demand quiet operation and cleanliness. It was found that such features had a great influence on the factory employee. The sales engineer, therefore, is distinctly interested in such factors as these in his work in obtaining acceptance for engineered products. Dormant in the past, these new characteristics

of equipment now become of importance in buying because new values of usefulness have been attached to them. More and more the tool is being designed for man, rather than man being trained to be satisfied with the tool.

A manufacturer of specialized machinery used in processing food products, in reviewing the designs of this apparatus, concluded that not only mechanical improvements but also radical changes in the external appearance and finish of the machinery were necessary in order to increase its acceptance. A capable industrial artist was retained who worked closely with the designing engineers, and as a result the new line of machinery came out "in a new dress." The sales engineers engaged in selling it had thus available a number of advantages to present to prospective purchasers which related to satisfying the human appeal. The redesigned machinery was now much more convenient to operate, clean, quiet, and appealing to the eye, and its use was effective in raising the comfort, enthusiasm, pride, and operating morale of employees. The management of such companies as bought it now invited the public to inspect their plants and in this way advertised their products and services. Selling this redesigned equipment took on a changed technique.

With the accelerated introduction of machinery and equipment, we find that the individual workman has become continually further removed from the actual work done. Whereas years ago a worker often laid out his work himself and became skilled in performing in sequence a variety of operations, today he directs a machine which largely performs these operations in an automatic manner. The activity of the workman, then, has changed from that of employing a trained mind and hands to create things, to directing some mechanism which produces at least the same result as was formerly produced by hand—usually a better one.

Whereas formerly we valued primarily the skill of the craftsman, we now hold the highest regard for those who create and apply the machine, and for the machine itself. The workman focuses his attention on the machine, and his job has become the directing of its operations and the coordinating of its activities with other production units. The pride of skill in accomplish-

ment by hand has been transformed to a pride in the machine itself and what it can accomplish under the direction of the operator. Save the man and expend the machine has become our enlightening philosophy. This has brought into the sphere of the sales engineer a careful consideration of the great importance of the relationship between man and machines from the viewpoint of the operator. All mechanized devices must now be convenient, safe, and designed to please workmen, and these features become of increasing economic importance to the owner and user in satisfying employees.

Human relationships in the use of equipment and the execution of productive processes have assumed a position of the greatest importance. Keeping employees interested, happy, and healthy is now looked upon as one of the most important functions of management. What changes will occur by the introduction of new equipment and new processes must now be considered from an economic standpoint that, more and more, includes social values. If the welfare and safety of the employee can be improved, some definite profit-making advantages can be gained. Industry actuated by a desire to make greater profits for the benefit of stockholders is learning the value of creating steady and pleasing work for all who share in its labors. What is being done to create an atmosphere of safety and well-being for the masses who produce is happily becoming an accomplishment of our times; and wise management's greatest single desire is to create those conditions in which people will want to work, because profits in operation ultimately depend to a large extent upon this important factor.

To get a vivid picture of how the relationship between men and machinery has changed, we may well point to the development of the airplane. The initial object of the manufacturer was simply to make the device fly; then came objectives of speed, reliability, efficiency, and low cost; and finally of prime importance were convenience, comfort, and appearance.

Even machine tools, the most technical of all equipment because they are created to make all classes of other productive equipment as well as reproduce themselves, are now being extensively redesigned to satisfy human appeal, comfort, and convenience when in use.

Such a situation opens up to the sales engineer problems in selling which formerly had little significance, because he no longer is limited to considerations that relate only to technical performance. If in what he promulgates and proposes he can show where improved operations will come from greater satisfaction and comfort to the worker, he can thereby show advantages in economy.

The Sales Engineer Should Have an Increasing Interest in World Markets

Originally the American colonies depended on Europe for technical knowledge and production equipment. Then followed a period when our natural resources of raw materials became recognized. Inventive genius, based largely on the technical skill of immigrants brought into an atmosphere of free enterprise, started to devise our own instruments for production. A rapidly expanding domestic market developed for all classes of machinery and equipment. With the development of mass production methods depending on specialized effort, the United States finally became a leader not only in production but also in the instruments required to make and maintain a wide variety of apparatus used by industry, commerce, and the individual.

With our growing accomplishments in this direction and an urge on the part of domestic manufacturers to seek wider markets, exporting equipment has assumed greater proportions. Though from the first we have exported commodities, at least from the start of the present century, we have become exporters of machinery and equipment in consistently larger volume.

Improved and rapid travel have tended to make us world con-

scious. Our conceptions of the individual irrespective of his nationality have changed. There has been a growing feeling that with the elimination of time and space, we cannot prosper unless all nations prosper. Today many industrialists now recognize that trade—buying from as well as selling to other nations—can be made to support world progress and world peace.

The old conception of the industrialist of foreign markets has altered. "Let us dump our excess when we have one on the foreign markets" was a principle employed. Export business was purely an opportunist's measure, and the foreign market was looked on to salvage excess production, and thereby keep factories going at a lower overhead expense than might apply at times of shrinking domestic demand.

This conception of the export market is disappearing. Progressive manufacturers now study it, recognize its peculiarities compared with the domestic market, and prepare to meet it in a permanent way. Most manufacturers today sell to the foreign market either directly or indirectly. Interest in it and dependence on it constantly increase. Its peculiarities are becoming better understood. Now the successful machinery and equipment manufacturer recognizes that specialized methods and talents are necessary.

Even though we hardly regard Canada as a foreign country, nevertheless selling to that market presents problems different from selling in our own country. Though several of our larger manufacturers own and operate plants in Canada, a considerable volume of machinery and equipment is exported to that country being sold direct to the ultimate buyer, or resold through local representatives. Since many sales engineers with headquarters in the United States may cover parts of Canada or be called upon to negotiate business there, a knowledge of market opportunities, trade regulations, and purchasing methods is often highly important.

Meeting foreign trade conditions interests the machinery designer, for matters of foreign customer habits, tastes, methods of use and maintenance differ from ours. The production of apparatus for foreign needs may differ; certainly its packing and shipping.

In the area of financing and accounting, as well as credit and collection, the problems encountered differ widely from domestic

practice. Based upon product, competition, and country there are wide differences in market demand and possibilities. Sales problems also are peculiar whether the product is sold direct or through resale channels. Foreign purchasers differ from domestic in approach, interest, and methods of doing business.

Though the number of sales engineers specializing entirely in selling to other countries may be relatively small, every sales engineer can help himself by becoming more familiar with foreign sales problems. Sooner or later, with the growth in export business, he will encounter problems relating to foreign business, particularly in selling apparatus to the original equipment manufacturer who sells a share of his product abroad.

It is true that war and its consequences have introduced many complications and restrictions to doing business with certain foreign countries, but such obstacles are continually changing and larger opportunities are sure to exist.

Importance of Profit

It is becoming increasingly clear to industrial leaders that every industrial enterprise has a fourfold responsibility: first, to those who invest in the enterprise; second, to all who gain a livelihood from it; third, to those who buy from and sell to the enterprise; and fourth, to the community at large, or the public.

Adequately to fulfill all four obligations, and to continue to do so, the individual enterprise must of necessity consistently make a profit on its operations. Such a philosophy has served as the basis for industrial progress in our country. If those who invest receive no return for their outlay and the risk they assume, capital necessary for conducting any enterprise will be lacking. Profits attract the investor, and losses repel him.

If you had examined closely the dividends paid to shareholders

upon stock issues listed on the New York Stock Exchange for the year 1939, which proved to be a year of relatively good business activity, you would have found that upon more than one-third of these listings the shareholder received nothing in return for his investment. Upon many other listings the profit realized would serve to discourage any investor who naturally is seeking for a place where his money will yield a return, be safe, and increase in value. Many reasons may exist for a temporary reduction in profits or even a loss, but no company can be considered successful unless over a period of years it definitely earns a fair profit for those who invest in it. A large proportion of investors are themselves also workers.

If one chose the year 1948, conditions would be much more favorable to the shareholder, but we have only to go back to 1931, 1932, 1933, or 1934 when business was almost at a standstill, to find conditions very much worse. If we consider profits intelligently we must consider a period of years, or one year which represents a fair average.

There are three principal ways to dispose of profits after paying for taxes, rentals, and purchases and satisfying the fourfold responsibilities of the enterprise named above:

Pass it on to shareholders.
Invest it in productive ground, buildings, machinery, and equipment calculated to be necessary for future operations.
Store it up for a "rainy day," or to help maintain the organization and plant when profits are "minus, not plus."

If any one of these were consistently done to the exclusion of others the enterprise could not continue to exist. Those who manage the enterprise must continually exercise their judgment as to how to dispose of profits when they exist.

We believe in industry today this judgment is usually good. Sometimes it is illogical and even unfair. However, if illogical or unfair, it is usually corrected, and often promptly. Competition goes hard with mismanaged enterprises.

Obviously if our whole economy were regimented and law dictated how profits were to be handled, one head would determine what profits would be and how they should be disposed of. Such

judgment being concentrated, it is difficult to imagine what the results would be, unless this power were that of Divinity.

Industrial leaders in this country, as well as the public, have often been prone to judge the importance of any industrial enterprise by its size. The volume of business done annually, the size and number of plants or operations involved, the quantity of units produced, or the number of employees—such factors as these have been often pointed to with pride as a just measure of importance. They do not serve, however, as a true measure of success, for the final answer of successful operation is continuous and consistent profit, adequate in quantity to meet the four obligations of the enterprise and provide for the many risks involved in such an accomplishment.

Industrial management faced with fluctuations in business activity and attracted by an innate desire for rapid growth has, in searching for profit, often unduly sought a solution only through increased volume in production. Profits are always "around the corner" if only "such and such a volume" can be reached, and insufficient attention has been paid to turning unprofitable business into profitable business through a more careful study of economics.

In the work of the sales engineer the importance of profit cannot be overemphasized. Not only should every transaction concluded by the sales engineer be a profitable one to his company but also, since the whole of engineering selling is based upon increased savings and profits for his customers through use of the product sold, the sales engineer must be highly conscious at all times of profit-making possibilities. Every successful sale is both a profitable sale *to the supplier* and a profitable purchase *to the buyer.*

Depreciation

Wealth comes from production. But production comes largely from the increased use of better tools in the hands of capable, enthusiastic, and contented workers. A constant drive to invent, design, and make better tools results in a shorter usefulness of the tool in its original shape.

The tool or machine, of course, wears out and loses value. But the more we bend our energies toward the production of a better tool, the more we depreciate the original value of the tool that is to be replaced. Thus one important element that depreciates value comes from the availability of improved tools.

Provision must, therefore, always be made in every operation and every plant for the expenditure of necessary funds to compensate for this loss in value, and preserve a steadily increasing efficiency.

For many years there has been a varying increase in the cost of all manufacturing facilities—or, we might as well say, a decrease in the buying power of the dollar. At times the inflationary surge has been pronounced, followed by a deflationary surge of lower compensating volume. The general trend, however, has been decidedly upward. Therefore, the manufacturer is commonly faced with the problem of having to replace worn-out or obsolete equipment with new equipment at a higher cost. Unless this factor of increased reserve for replacements is considered, future trouble is likely to be encountered.

One important phase of the sales engineer's work is that of recognizing all the factors that enter into depreciation, and being able to demonstrate the real value of new and improved machinery and equipment that might take its place.

A few years ago the president of a small plant in Pennsylvania was showing a sales engineer the equipment he employed. Stopping before a particularly old machine, "Look at that old

boring mill," he exclaimed. "It must be all of fifty years old. We have charged it off long ago—in fact it has paid for itself many times." When the sales engineer asked the owner how much it was costing him each day to use this old machine in place of a modern machine which would do the work more quickly and more accurately, the owner appeared confused. This true basis of consideration had been ignored.

Machinery and equipment are now so widely used that the problem of the sales engineer today often deals with selling an improved item of equipment to replace one that is antiquated. Factors applying to depreciation enter into the job of justifying the modern equipment.

The old equipment may be "charged off" and therefore carries no value in capital accounting. The new equipment at once appears on the purchaser's books as an item of capital investment. Though the old item may be "charged off," its continued use may represent a heavy expense, but this loss may be hidden in the total cost of plant operation. The new item, however, stares management in the face as an important capital investment that must justify a return.

What then is the sales engineer's initial job under such circumstances? It is to evaluate operating results, new against old, by simple arithmetic. This evaluation includes a lining up of all items that go to make investment costs, and operating results. Depreciation is one important item in this evaluation and constitutes the matter of loss of value against time. Obviously the sales engineer has much to sell besides the results of such a calculation, for figures do not so easily apply to those benefits coming from the use of new equipment that increase employee morale, safety, comfort, and health.

It is impossible to say correctly that one machine should be replaced because it is, for example, ten years old. A machine twenty years old may be very valuable and should not be replaced. The improvement shown on the machine that might replace it may not be pronounced. The machine may now be used rather infrequently; hence, though necessary to the plant, it may not be of great earning value. On the other hand a machine only five years old may be obsolete owing to rapid improvement in inven-

tion and change, or a rather sudden change in product fabricated or process devised.

In one large metal-working plant there are several enormous planers for surfacing large iron and steel castings. Some of these machines are over thirty-five years old. However, the character of the work in this plant has changed over the years, so that these planers are now used only for short intervals. Nevertheless such work as they do is necessary. Owing to the lower load factor it is not wise to replace these machines with modern ones—at least not yet.

However, in this same plant a quantity of machine tools are not five years old. They are being replaced simply because processes of manufacture have changed and greater quantity output and increased quality of work are demanded. Furthermore, improved machine tools suitable for the purpose are now available.

The accounting practice followed in depreciating the value of purchased equipment by any of the sales engineer's prospects may vary considerably. An understanding of the basic framework of depreciation is desirable. When equipment is bought and installed by a customer, it is customary to list the asset value of the equipment on the customer's books. The capital invested must be recovered from earnings from the machine during its profitable life. But when the equipment is purchased no one knows what its profitable life will be. Some estimate must be made, for funds must be set aside for replacement. It is common, therefore, to assume some number of years and set up a reserve fund for replacement purposes.

The rate of depreciation is also important. This, too, cannot be accurately determined in advance. Judgment must be relied upon. However, the simplest and most widely used practice is to follow the straight-line method. Based on the original investment and an estimate of the life of the machine under the conditions and circumstances named, a fixed percentage of the original price of the equipment must be assigned to the "reserve fund," or "replacement fund," each year. A further complication is involved, because the Bureau of Internal Revenue sets certain rules which regulate deductions for depreciation, in order to prevent applying

corporation profits excessively to depreciation, thus avoiding a share of the tax burden.

The sales engineer approaching a prospect is naturally interested in showing that the equipment he sells will pay for itself in as short a time as possible. But his calculations must be based on the practice followed by the individual prospect in depreciating plant equipment of the character to be furnished. If the practice of depreciation followed by the prospect is within reason it is best to follow it, rather than complicate the selling task by urging a change. Sometimes, however, the prospect's depreciating methods are so indefinite that the sales engineer may find it wise to make his own recommendation on depreciation and rest his case upon his own estimations.

PART TWO
Buying and Selling

The Sales Engineer Should Have a Knowledge of the Market

The sportsman, to be successful, must know where the game is likely to be as well as its characteristics and habits. Similarly, the sales engineer's selling efforts are fruitless unless directed to an existing or potential market. Identifying the potential buyer is often one of the most difficult problems in sales work. Failure in such work furnishes ample opportunity for wasted effort.

Suppose that we had before us an enormous map of this country with a spot marking each buying and selling location of every industrial enterprise, such as those engaged in manufacturing, transportation, mining, or the production of power. On this map suppose we were to draw lines connecting these individual points. Such a map, with its numberless dots and connecting lines, would give us a vivid picture of the avenues of flow in interindustry trade. It would be of little practical use, however, because it would fail to show a particular supplier the customer market existing for his product. Such a map, therefore, should be split down into individual maps, each one showing the industrial purchasers constituting a buying group on the basis of the nature of their business and consequently their equipment requirements. One map should show the paper-making companies, another the meat-packing companies, another the steam railroads, another the copper-mining companies, and so on.

A particular product or a group of related products has either a "vertical" or a "horizontal" demand in industry. For example, paper-making machines can be sold only to the paper-making industry; consequently they have a vertical demand. Centrifugal pumps, on the other hand, have a horizontal demand, for almost all industries at one time or another buy them.

Customer markets can therefore be best approached from the viewpoint of the *industry group* of which they form a part and of their *geographical location.* In the sale of products that have a wide possibility of use by many classes of customers, the sales engineer starts his work with a knowledge of customers within a given area, as illustrated in the following instance:

A sales engineer located in Cleveland, Ohio, is responsible for selling steam apparatus required for power purposes. Several counties in northern Ohio are assigned to him as his territory. Most industrial companies use steam for heating and often for generating power in connection with manufacturing processes. Since such apparatus as this sales engineer handles has a wide use, his interests relate to practically all industrial, commercial, and institutional enterprises, such as plants and important buildings. He obtains from the trade directories a list of all industrial plants, buildings, and institutions, and records those having an installed capacity of 200 hp. and more. He then groups these according to size, location, and industry. This gives him a working list which can be intelligently used, to which can be added new prospects as they come into existence. In this instance, the sales engineer's approach to the market is from the geographical viewpoint, and the selection of potential customers of certain kinds has little relation to the industry of which they form a part.

The sales engineer who sells specialized equipment used in only one or a few industries interests himself exclusively in those industries falling within the group. The geographic territory assigned to him may be large and the customers scattered, but he concentrates his sole attention upon the industry.

A sales engineer selling equipment for use in petroleum refineries covers several states in the northeastern part of the United States, roughly east of the Mississippi and north of the Ohio rivers. He obtains a list of every refinery in this territory, properly indexes them as to their capacity, refining process used, and what company owns and operates each, along with the headquarters' location of the controlling company. Since this sales engineer's company does a nationwide business, he must

of necessity cooperate closely with other sales engineers employed by his company to whom other areas are assigned. Having within the limits of his territory the headquarters of several petroleum companies, he must have these properly recorded.

"Yardsticks" Measuring Demand

An absolutely accurate measure of demand or sales potential for a class of apparatus is impossible to find. There are ordinarily several variables. To evaluate requires judgment. Only in the case of a "vertical demand" for a highly specialized class of apparatus can a high degree of accuracy be obtained. Even then the demand may depend upon the creative effort and the ability of the sales engineer. For instance, a highly skilled paper-making machinery salesman might be successful in developing facts and convincing the purchaser to substitute a modern machine for one in service for some years. A less skilled sales engineer might fail to do so, or not even attempt to tackle the problem.

Measures for potential sales possibilities applied broadly to industry are these:

Number of employees.
Capital invested.
Value or quantity of output.
Power employed.

Such figures applying to areas and individual companies, where they are applicable, may well serve as a general guide. Obviously, consideration must be weighed according to the particular apparatus or service sold.

Errors creep in. For instance a plant highly mechanized requires relatively fewer employees than one where much handwork prevails. Hence the comparison of two plants doing the same kind of work, when judged on the number of employees, may be misleading.

Likewise, since dollars invested in a modern manufacturing plant largely apply to machinery and equipment, the value of the plant as a measure of future demand for such apparatus may be misleading.

In the same way the value of output of a plant may be an

inaccurate measure. A highly mechanized plant recently equipped with modern machinery may have a very large output, yet present only a meager immediate market for new apparatus.

Again, the power generated or purchased by an industrial may fail to reveal to the power plant or electrical apparatus sales engineer the true demand for new apparatus.

In the case of a contractor, the volume of work being done may be a good measure of demand for apparatus required to be a part of the permanent installation.

Thus basic data of the four classes named may be of great value for the sales engineer as a starting point in making an analysis of industry, territory, and prospects. Further study of individual potential purchasers is necessary, however, through contact and observation. The sales engineer proceeds to determine:

The size and importance of each purchaser in terms of buying power of interest to the sales engineer.

The nature of the purchaser's production problems and requirements.

When the purchaser's needs are most likely to exist and become acute.

How the customer proceeds in selecting what to buy and in making the purchase.

A Practical Approach to a Market Area

The abundance of statistical information relating to a market, and the variety of sources from which it can be obtained, may confuse the sales engineer in his approach to a territory.

One experienced sales engineer representing a group of complementary machine tool manufacturers was assigned to a new territory. Little information was given him on his new territory, in which were located a wide variety of manufacturing plants both large and small. He was confronted with the problem of finding the location, size, and importance of prospective purchasers, in order to map out his work and conserve energy and time.

First he obtained a list of past sales made by the companies he represented and thus knew those plants that had made previous purchases.

Second, he approached the chamber of commerce of the state he was in and got from them figures showing the local density of metal-working plants. He also visited the local power company serving the area and obtained available information, which was a guide to industrial activity.

Third, he inspected an industrial directory compiled by the Department of Commerce of the state. This directory included a list of manufacturers, showing the nature of business, number of employees, and the officials in charge of each plant. It enabled him to spot those prospects of interest.

Fourth, on the basis of this working list, he was able to gather further information on important prospects from recognized trade directories and registers and thus compile essential working information on each.

Fifth, he established the practice of reading those trade journals that might be helpful, as well as the daily papers. Among other facts obtained, he learned that there had been in recent years an influx of companies which specialized in fabricating electrical equipment in fields of communication and electronics. He also discovered two or three large automobile and equipment builders that planned to establish assembly plants in his area.

Thus this sales engineer evaluated the importance of existing buyers, established their location, employed a record of past sales for the makes of machine tools handled, and finally got a good "feel" of what was taking place in his territory. Proceeding in this way he could program his daily work efficiently.

It will be noted that this sales engineer was interested in several industries—but only those engaged primarily in metal working. However, there were several large textile and paper-making plants in his district. Though of minor importance, he recognized that each one had a maintenance shop which offered a fair market for his tools.

Market Variations

The *nature of the market* changes so rapidly that the successful sales engineer *continually* studies the market assigned to him, no matter how few or how many customers fall to his lot to serve.

He goes about such a study systematically, but only to an extent that is practical and useful, and with experience he almost senses market changes as his business life becomes a part of the market he serves. Since each industry or groups of producers are bound together by common processes and problems, we find their interest much the same. Their technique and terminology become highly specialized, as do those of the physician and lawyer. All one needs to do is attend a technical meeting of a body of textile, mining, power plant, or marine engineers to be convinced that the sales engineer who would successfully serve them must speak their language and understand their aims. Failing to do so, he cannot expect to gain their confidence or be worthy of sharing in a solution of their problems.

A young sales engineer for an equipment manufacturer, with little experience or preparation in coal-mining activities, was recently located in Bluefield, West Virginia. His first problem was to gain a practical familiarity with coal mines and the operation and maintenance of their equipment. He obtained a good book on soft coal mining, reviewed several copies of leading coal-mining journals, and, before visiting any customers' personnel, obtained permission to go through the operations of several mines, where he asked repeated questions and made detailed observations. He sought out other sales engineers selling different lines of equipment from his own, made their acquaintance, and learned what he could from them. While becoming familiar with the technical aspects of mining coal, he made a careful study of the mining companies, and the location, size, and character of their operations. Thus, he equipped himself rather quickly to be of value to customers as he started to sell.

The sales engineer who knows *when customers' needs exist or become acute* can time his sales effort with the greatest efficiency.

The sales engineer selling sugar-processing machinery watches carefully crop conditions, the price of sugar, tariffs, and the volume of production.

The sales engineer selling shovel equipment used in coal-stripping operations as well as general construction work watches the price and demand for coal, for he knows that as prices

go up coal-stripping operations requiring the use of his products may at once be started.

Builders of cement machinery watch not only construction and building activities but also crop conditions; since the millions of farmers in this country buy considerable cement, the success or failure of crops directly influences the demand for this product.

Suppliers of ore-handling machinery watch the condition of the steel industry and the seasonal supply of ore, which for the most part can be shipped only during the summer when lake navigation is possible.

We cannot place too much emphasis upon the wisdom of the sales engineer's familiarizing himself with the problems surrounding a particular industry that offers a market for his products. Specifically, he must:

Know the processes pursued by each purchaser and the technical and business problems encountered.

Discover the industry's future plans involving anticipated changes and the development of new products and processes.

Identify and understand those outside influences such as financial influences or technical consultants that affect the progress of the industry.

Markets have many strange characteristics. They *move from place to place,* and to the inattentive appear to spring up unexpectedly. For many years the textile industry has been moving South, but only since 1930 have large quantities of paper and pulp been manufactured in the South, a result of the perfection of processes employing quick-growing pine lumber. New oil and gas fields are discovered almost overnight, and immediately there exists a new market for equipment required in developing, processing, and transporting fuels.

A sales engineer located in Atlanta, and representing a company doing a national business in electrical equipment, learned some years ago of the proposed activities of existing northern paper manufacturers in establishing large southern mills. He immediately set about familiarizing himself with the northern companies—their processes, equipment, operations, principal

personnel, and methods of buying. With the cooperation of other sales engineers of his company located in the North and serving large existing paper companies, he was well able to work intelligently with the representatives of the northern companies as they became active in the South and long before purchases of equipment were made or operations started.

Markets reached by the sales engineer are continuously being *created and also destroyed.* Change comes through the development of new instruments of production used in industry, new products or services requiring these, as well as new processes of production. The sales engineer himself helps to create markets and destroy them, because his work involves devising new methods of operation and exploiting apparatus which replaces that which may be in use. Any industry selected will serve as an example. The introduction of steam turbines and Diesel engines has destroyed the market for steam engines to a great extent. Rayon and nylon have largely displaced silk, thereby creating a large market for chemical and processing equipment. Legislation affecting taxes and tariffs, government construction programs, storms, floods, and wars all alter markets in a definite way.

A specific illustration of the effect of legislation upon certain markets is the recent ruling of the Supreme Court upon the basing points of steel. Freight expense becomes a large item in the distribution and sale of goods that are heavy and bulky. Manufacturers are forced more and more to move points of supply so that they will be as close as possible to points of consumption.

Sales engineers watch these trends and changes closely, because they must be prepared to take advantage of them. The demand for woodworking machinery and equipment for making office furniture has steadily decreased because sheet steel and plastics have been substituted for lumber to an increasing extent. Farm-lighting plants became less popular as public utilities extended their lines into the rural communities. Markets seldom become saturated, in the true sense of the word; rather, they alter as the result of new processes or methods, or the introduction of new products furnished by the sales engineer.

Markets vary too *with general business conditions,* and, whereas most products of interest to the sales engineer may decrease in demand as business activity in a given industry falls off, other

products may increase in demand for that very reason and because they definitely assist the purchaser in economizing. Renewal parts for equipment usually are relatively popular in poor times, and the sales engineer often is able to develop markets for equipment necessary to his customers.

Making the Information Work

Although each industry has the object of profit-making, each has its own peculiar problems of a technical nature, specific things it is trying to do toward product and process improvement and the elimination of expense and waste in one form or another. The sales engineer's position is at once discounted if the purchaser has to familiarize him with the essentials of his business. The sales engineer who knows the customer's technique immediately has an advantage, because confidence is at once established, and a ground for joint understanding and progress is provided by their mutual interest. Knowledge of the industry and its peculiar technical problems can be gained only by watching and understanding technical processes in operation, and by reading technical and trade publications. Getting into plants, analyzing processes, and keeping up to date on what is going on in the industry through the technical press, therefore, are all vitally important.

Fortunate is the sales engineer who can bring to his market new ideas applicable to the business. Such a salesman is "welcome as the flowers in May," *provided* that he knows what he is talking about. Of one successful sales engineer, in referring to a particular customer's operating plants where access was ordinarily difficult, I asked the question: "How do you manage to *get in*?" His reply was, "My problem is to *get out*." This was because he knew not only the customer but also the industry and actually produced helpful and often new ideas. Nothing moves along in our society quite so fast as industrial improvements, and the sales engineer who is informed on new methods of doing things always has an attentive audience. If the salesman's responsibilities cover customers in a wide variety of industries, he can best devote his attention to becoming familiar with the technique of the more important ones, and he should be constantly on the lookout for ideas developed in one industry that can be applied in others.

Motives Actuating Buying

Every sale is a purchase, and the course followed by any successful salesman must be based upon an understanding of the interests of the purchaser and a definite appeal to these interests. What these interests are will depend both upon the kind of buyer and upon the kind of product that constitutes the subject of the transaction.

We have seen that the attention of the sales engineer is centered upon purchasers in the various activities of industry, and also that the products that he engineers and sells are often durable goods used by these customers in the production of other products or desired services. Under such conditions, what motives actuate the minds of such purchasers in buying the products considered here?

By way of contrast, let us first analyze the motives of the individual purchasing perishable articles for the purpose of consumption. He desires, or is made to desire through sales-promotional effort, a perishable item. Primarily the impressions created upon his mind by the five senses lead to action in making the purchase. Any suitable form of emotional appeal may play its part in stimulating desire and determining action. With many articles the desire is promptly satisfied, and another desire may take its place.

With the products furnished by the sales engineer to the market he reaches, the purchasing motive is quite different. Emotional appeal or the satisfying of personal desire plays little part. A need exists; often the efforts of the sales engineer have been effective in causing a recognition of such need. Satisfying this need has no other purpose than leading the way to increased profits or decreased losses to the purchaser in some phase of production. The entire motivating desire is based only upon the *element of profit.*

In purchasing machinery and equipment so familiar to the sales engineers, therefore, the buyer thinks only of the profit-making

possibilities of the purchase. He measures outlay at the time of purchase and during the period of use, and the dollar return for this outlay. Initial cost, operating cost, maintenance expense, operating life measured by depreciation—all are considered in terms of earning power. If the purchase of machinery and equipment could be avoided it would be gladly, for the matter is one of neither personal satisfaction, sentiment, nor impulse.

In a certain small textile-finishing plant a large quantity of water required in processing fabrics is purchased from the city. A sales engineer representing a manufacturer of deep-well pumps knows that a satisfactory water supply can be obtained from wells sunk some one hundred feet in the ground. He establishes the necessary volume of water, the cost of drilling the wells required, and the installation of pumping equipment together with the annual cost of operating these. In such figures depreciation, interest charges, normal upkeep expenses, and all less evident cost items are included. The evaluation of these figures shows that a material saving could be made by thus establishing a local water supply. The management of this company is approached, becomes interested, and as a result pumping equipment is purchased.

What has been sold and bought? An installation including apparatus, engineering skill, and an ability on the part of the supplier to render a continuing service, all summed up in a cheap, reliable, and good water supply. What motives have actuated buying? The dollar motive. The appeal to the five senses has been of slight importance. The quality of the apparatus purchased or the ability of the supplier has meant nothing except through interpretation in operating costs. Money-saving and money-making were here combined to establish the buying motive.

Occasionally we find the profit motive somewhat hidden. The uppermost motive may relate to pride, prestige, safety, convenience, appearance, etc. Let us not be misled by the thought that in this activity human and personal factors do not exist. They often are potent factors relating to the product sold, but they are important only as they influence the economics of operation and can be interpreted into increased profits or decreased losses, as will be seen in the following instance:

In an eastern factory making novelties, a study is made of employee absences due to sickness. Poor ventilation and uneven heating throughout the plant are found to be the causes of such sickness. A new heating and ventilating system is laid out and installed. Results show it to be fully justified in eliminating losses due to the absence of employees, and increased output is attained by making workers more contented and happy. Thus, improving conditions for the worker results in greater efficiency and profit.

With the profit motive established as actuating buying in the field of products which the sales engineer attempts to distribute, we find that this profit motive usually is not directly associated with the immediate article purchased, but with *processes carried on in the production of goods or services.* In other words, the purchaser is interested in the purchase of a particular article only in its relationship to a whole scheme of operations all closely tied together to produce an economic result. This machine tool bought or that conveyor installed are useless in themselves, for they only form a part of a whole operating system. Where they can add to the efficiency of the operating whole, in relation to their expense, they present possibilities of value which actuate the purchase.

In the manufacture of sheet steel, losses occurred in delay caused by stopping the material for purposes of shearing it. For many years such losses were not recognized as avoidable and were taken for granted. Within recent years manufacturers of steel-mill and electrical machinery, with the help of steel-mill engineers, attacked this problem in earnest. The initiative came from the desires of sales engineers employed by these equipment manufacturers to obtain business and of steel-mill operators to reduce production costs. Thus the "flying shear" was developed and perfected through applying sales-engineering talents to a study of steel-making processes.

The need which guides the buying motive may exist from a number of causes, as we shall see from the following illustrations:

A breakdown may occur with the operating mechanism of a run-out table in a slabbing mill of a steel plant. This makes

temporarily idle a process of steel making which definitely depends on continuity of operation for profits. The failure is of major importance, and the mill must be put into operation again immediately. The need has the nature of an emergency, and the motive to maintain a profit-making process suddenly causes the purchase of the necessary repair parts for the run-out table.

In a study of losses in a textile mill fabricating rayon, it is found that, in certain portions of the mill where the finished material is handled, losses result from discoloration of fabrics caused by dirt in the atmosphere. Estimates are made of equipment necessary to purify the air by a filtration process. It is found that the results to be obtained will justify the expense. A filtering system is purchased, the buying motive being based upon a need for increased plant efficiency through the elimination of losses.

A plant making pressed-steel, chrome-nickel parts for automobiles enters the year with a large accumulation of back orders, and much new business in sight. From a study of plant conditions, ample facilities are available for stamping and pressing the metal parts, but the chrome-plating equipment is being worked to capacity. An economic need exists for plating equipment, and the buying motive is created by an expansion in the manufacturing capacity of the plant.

Occasionally, some forces beyond the enterprise itself motivate buying:

Some years ago, the state of Pennsylvania passed a law making it compulsory that all amusement houses be supplied with a source of electrical energy in addition to that provided by the public utility. Thus there was created a buying motive to purchase emergency lighting units simply to comply with legislation established to protect life.

When Cellophane was invented and perfected in sheet form for packaging articles, there was no machinery that would handle it satisfactorily in the wrapping process. A buying motive came into existence directing the development and purchase of such machinery. The perfection and acceptance of a new

form of commodity had created a buying motive for technical products for production.

The more clearly the sales engineer understands the buying motives of each particular purchaser, the better he is able to react in satisfactory sales accomplishment. Suppliers of technical services, like suppliers of products, have been slow to recognize that the purchasing motives find satisfaction not in the service itself, but in the results of this service. This is well illustrated by electric or transportation service. Purchasers have no interest whatever in buying a unit of energy; their only interest is in what a convenient and trustworthy source of energy will do, and public utilities are coming to realize this more each day. Purchasers usually do not buy transportation for the pleasure of riding. What they buy is a comfortable way in which to see sights, meet distant friends, and satisfy business appointments; and the railroads are coming more and more to realize these facts.

Relation between Distribution and Selling

The greatest challenge to industrial management today is not design, fabrication, or construction. It is more economical distribution. Substantial rewards await those who can devise and put into effect ideas that will lower distribution expenses. In this field of endeavor lie opportunities for the sales engineer, the importance of which as benefiting society and himself cannot be overemphasized.

Distribution is necessary, and as markets expand its functions become more varied and inclusive. Its purpose is to place in the hands of the ultimate user, at the time desired, products or services of the kind needed.

Efficient distribution is necessary if the flow of goods which constitutes trade is to take place. Efficient distribution is constructive, because it adds value to any useful product. As a product leaves the factory door, its usefulness in the creation of values and profit to the user is only potential. When it becomes available at the time, place, and in the manner desired, it reaches its maximum value. Value is added by transportation, selection, availability, and modification, and, for most products of interest to the sales engineer, in relation to processes and other instruments of production.

Visualize for a moment what takes place in a large distributing system of petroleum products. From wells in Texas a boundless supply of oil proceeds through a series of pipe lines, booster stations, refineries, storage tanks, and packaging plants to local centers of distribution. Products are transformed, transported, and stored. Railroads and trucking companies play their part in further distribution, as do wholesalers and retailers, and finally from the local store you obtain a can of oil for household needs, or, from the service station, gasoline for the automobile. At every step these petroleum products become more suitable for customers' needs and available for use; consequently, their value increases.

Distribution is the operating system that brings into contact those who produce and those who use, making it easy to keep increasing and changing wants satisfied. Though it is only an operating system or mechanism of accomplishment, nevertheless the more efficient it can be made the easier it is for trade to flow and industry to prosper. Distribution is useless unless set in motion by a driving force so that trade is made to flow through the channels it provides.

That force that vitalizes distribution and causes desired action to take place is *selling*. Sales effort is that force by which the producer interprets to the user the products and services that he can furnish, assisting the purchaser to form sound opinions and reach a definite decision in the selection of products or services best suited to his needs. Selling sets distribution in motion and maintains it so that benefits come to the seller and purchaser,

alike. It has the power of an idea that forms new industries, such as those initiated by Vail, Marconi, and Edison.

Elaborate systems, perfect in themselves, may be established for the distribution of electric power or water, or for the transmission of messages; but they serve no purpose unless the motivating force is at work, that is, unless the product or service is made to flow from the producer to the user. In the same way systems for the distribution of equipment required by industry may exist, but they lie idle unless sales effort starts and maintains the flow of orders.

Selling, then, since it is the *vitalizing element of distribution*, is both constructive and creative. It accomplishes what no other force can possibly achieve. It makes trade possible, and the results of its accomplishment reach out to large numbers of people and benefit them. It keeps both workmen and capital employed, and supports our economic and financial structure.

This selling force is just as necessary in distributing products of a technical nature which must be engineered to meet a definite need and an exacting set of conditions, as in distributing merchandise to satisfy individual human wants and fancies. Though the same kind of force, it is directed and applied in a radically different way. In commodity merchandise, selling is a concentrated form of persuasion focused upon the individual to purchase the product that is skillfully exhibited to his view; in sales engineering such practices are of secondary service or value. This selling force takes a different form, for it deals with solving a technical problem in an efficient way to produce an economic result, and with persuading the buyer to put these results to use in making profits.

The form in which our industrial companies are charted often misleads us in getting a clear conception of the importance of *buying* and *selling*. These two functions support all other activities of each producer.

Ordinarliy, we conceive of a group of scattered stockholders holding top place in the company chart. They elect a board of directors, who in turn elect the president, vice president, and other officials. Next come the department divisional and section heads. One department is responsible for selling, usually under

a sales manager. At the bottom of the chart one finally reaches the salesman.

The real head which supports the entire producing company is the *customer.* His desires and needs ultimately shape all effort. The organization thrives only through serving him well, for the "customer is the boss."

To grasp this conception let us reverse the chart and place the customer on top, and directly under him the salesman. Following down our new chart, we finally come to the officers of the company, the directors and the owners. Management's whole job is to support an organization to serve the customer. The success of every employee, every shareholder, depends on this. The sales engineer is the mouthpiece of the company in dealing with the customer.

Distribution involves, to a greater or lesser degree, certain major functions and unavoidable risks that depend upon the nature of the product and the kind of market. They are these:

Identifying those who can use the product, i.e., locating prospective buyers.
Gaining acceptance for products sold, i.e., carrying out a sales-promotion and exploitation program.
Determining and assuming customer credit risks.
Stocking—and thus making products that are in popular demand or those required on short notice available to the customer.
Selecting and applying the product to meet individual needs.
Obtaining and filling orders.
Collecting payments for products sold.
Furnishing, by some method, with the support of the manufacturer, a form of service that will assist the user in continuing to get satisfactory results from the product in service.

Distribution consequently includes a complete operative system dealing with equipment from the time the producer finishes work on it, during the time when it is being put to use by the purchaser, until it ceases to satisfy his requirements. Presently we shall see that distribution is actually accomplished through a variety of channels or routes.

Characteristics of Existing Systems of Distribution

Although the most important phase of the average sales engineer's work concerns the actual purchaser upon whom his efforts are directed, he cannot successfully carry out his duties without a clear knowledge of the channels through which equipment flows from the original supplier to the ultimate user. Not only may he be employed by those who manufacture equipment or those who buy to sell again but also at all times he must work closely with others who sell equipment or services that fit into those he endeavors to furnish. Let us illustrate the necessity of a knowledge of the various channels of distribution by a particular instance.

A sales engineer is endeavoring to sell a paper-machine drive to the management of a paper manufacturer about to erect a new mill. A firm of consulting engineers has been employed to lay out the mill and recommend the various items of equipment to be bought. Obviously at the start this sales engineer must understand the functions of the consulting engineers and must work closely with them to gain acceptance for his equipment. The particular paper-making machine requires in addition to the machine itself electrical apparatus consisting of motors and control required to operate it. These are purchased by the paper mill from the electrical manufacturer, and it becomes evident that a close working relationship is desirable between both machine and electrical-apparatus suppliers. Although the combination of the two elements may constitute the completed machine, water, steam, and electricity are required to operate it; and to furnish these products auxiliary equipment is necessary, provided by individual suppliers. Installation work is involved, requiring the skilled services of those specializing in plumbing, steam fitting, and electrical work. In each instance the sales

engineer finds it necessary or helpful to work closely with engineers, contractors, and suppliers whose services or products are related to his own problems in the sale of the paper machine.

The importance of the sales engineer's knowledge of various suppliers and channels of distribution is illustrated by a firm that operates in the air-conditioning field.

A complete heating, ventilating, and air-conditioning installation is to be furnished by a company that not only operates as an engineering contractor in this field but also acts as sales agents for a particular manufacturer of refrigerating compressors, condensers, evaporators, and fans. Naturally the sales engineer includes in this particular installation these products built by the company he represents. However, other equipment is required to complete the installation, such as circulating pumps, ducts, grills, and automatic temperature and humidity control. These are bought for the installation from one of a number of other suppliers. Knowledge of where to obtain such items, and of the conditions under which purchases are to be made, is essential to the success of the sales engineer, who handles the complete installation.

The various functions performed in the example mentioned may well be compared to those of a tailor who designs the suit of clothes to meet the requirements of a certain individual, sells it, purchases the materials, makes and fits it, and finally is prepared to render a cleaning and pressing service to its owner.

Sometimes the work of the sales engineer may include establishing, training, and supervising others engaged in the same line of work as his own.

A manufacturer of equipment used in industry for measuring, controlling, and recording the temperature, humidity, viscosity, and other characteristics of fluids and gases desired to extend its distribution throughout the Southwest through capable representatives. One of this company's sales engineers who had considerable business experience was given the task of analyzing the territory, selecting suitable sales representatives, and getting them properly trained to do the necessary sales engineering work required to distribute these products adequately throughout the

territory. This task not only required a knowledge of the available outlets in the territory that might undertake the work but also the selection of these outlets, the training of their personnel, and rendering assistance to them with important customers and upon large negotiations.

There are four general routes by which equipment produced by the original manufacturer reaches the ultimate purchaser:

Distribution direct, by which the manufacturer sells his products directly to the ultimate user.

Distribution through independent resale organizations, which devote their attention exclusively to purchasing from the manufacturer and selling to the ultimate user, or acting as a sales agent for the manufacturer according to an established distributor relationship.

Distribution through contractors who purchase equipment from the manufacturer to complete a particular construction project.

Distribution through other original equipment manufacturers, who require equipment that they themselves do not manufacture, in order to complete that which they assemble or fabricate for sale to the ultimate user.

In observing these methods of distribution which interest the sales engineer, it will be seen that all but the first involve selling to resale outlets which in turn sell directly to the user. Sales-engineering talents are required not only in selling to the ultimate user involved in all four instances but also in selling to the resale purchaser.

In considering the original manufacturer, the factors that determine the selection of the methods followed in distribution depend upon the nature of the product sold, the resources and talents of the producer, and the type of market served.

Direct distribution is invariably chosen if the product is large and expensive. No manufacturer of locomotives, rolling-mill machinery, or large steam turbines or engines would do other than sell direct to the ultimate user. Purchasers can easily be identified, they buy infrequently, and a high degree of specialized engineering talent is required in selling not commonly found among most resale organizations or contractors. Also equipment

that involves radically new ideas and requires specialized technical skill in selling must usually be sold direct. At a later date when such equipment has broad acceptance, it may well be sold through resale channels.

The functions that an independent distributor may perform for the equipment manufacturer are many. For instance he may only make sales under the manufacturer's name usually on a commission basis. On the other hand, he may buy from the manufacturer, and with the product in his possession he may perform all the functions of stocking, selling, approving customer's credit, filling orders, shipping, invoicing, collecting, and servicing.

The manufacturer's representative or machinery dealer plays an important part among the various classes of distributors. Usually each one is a relatively small organization employing a few sales engineers and serving a limited territory. Commonly such companies represent a few builders of machinery who make lines that are complementary and are sold to specific industry groups. Gross profit comes from a commission in the form of a discount applying to the product sold.

The form of distribution common to machine-tool manufacturers serves as a good example. The types and sizes of machine tools, including lathes, boring mills, drills, shapers, planers, and many more, are so numerous. No one manufacturer attempts to make more than one or a few types. Even moderately sized metal-working plants require a variety of machine tools, and consequently the retailer of such equipment has developed a strong and important position in distribution, for he offers a complete line of such apparatus, built by several different manufacturers.

The relationship between a given independent resaler and a particular manufacturer whose equipment he sells may vary considerably. The resaler may simply buy from the manufacturer as occasion arises, with no obligation to handle his products or represent him exclusively. On the other hand, the resaler may represent the manufacturer exclusively and serve as his sole outlet.

The contractor performs only the function of the resaler in so far as the purchase of equipment required to form a part of the particular installation that he is to complete is concerned. Usually this purchase of equipment includes only that required for the particular installation, whether it is steam boilers, pumps, electrical apparatus, or elevators for a building. Obviously he may

require equipment for use in the actual construction work which he purchases as an ultimate user.

Most contractors, both large and small, specialize in some or a few classes of work. Many engage in the construction of buildings; others in specialized fields, such as docks, tunnels, and air terminals. A large number are specialists in refrigeration, heating and ventilating, water supply, and so on, often including functions of engineering applying to a complete layout.

Frequently, the manufacturer of the original equipment who purchases other equipment to complete that which he sells may be a very important resale outlet for an equipment manufacturer. Manufacturers of Diesel engines buy large quantities of electric generators, gear units and control, to provide a complete power-producing unit acceptable to the ultimate user. Usually they find it much more advantageous to buy these items rather than manufacture them. Machine-tool manufacturers, likewise, purchase motors, electrical control and coolant pumps; truck manufacturers buy engines, batteries, and compressors. The purpose of the purchaser in buying these auxiliaries is not so much to profit by their resale as to make his product complete and ready to operate. The sales engineer acting as a supplier must take an unusual interest in the success of the complete equipment and all functions of distribution performed by the purchaser, whose program of effort usually will parallel that of the supplier. Resale business of this sort is particularly important because it represents a continuous flow of orders.

Wholesalers and jobbers, who sell direct to large ultimate users and to local retailers, serve as a channel of distribution only upon the smaller items of standardized equipment. The efforts of the manufacturer in selling to them take on many of the characteristics of merchandising; and, though an important market exists, it requires more sales-promotional and business skill than engineering ability. The same is true of large retailers whose business is done through catalogs and by mail.

In completing our outline of the principal channels of distribution of interest to the sales engineer, we should not neglect the consulting engineer and architect. Though engineers of this class usually do not engage in either buying or selling equipment, they prepare plans, specify equipment, and advise their clients, thus forming a very important part in determining what the ultimate

user purchases directly from manufacturers or what contractors or other suppliers furnish. To serve consulting engineers and architects properly a high degree of sales engineering is required.

The following diagrams will show the principal channels of distribution of interest to the sales engineer:

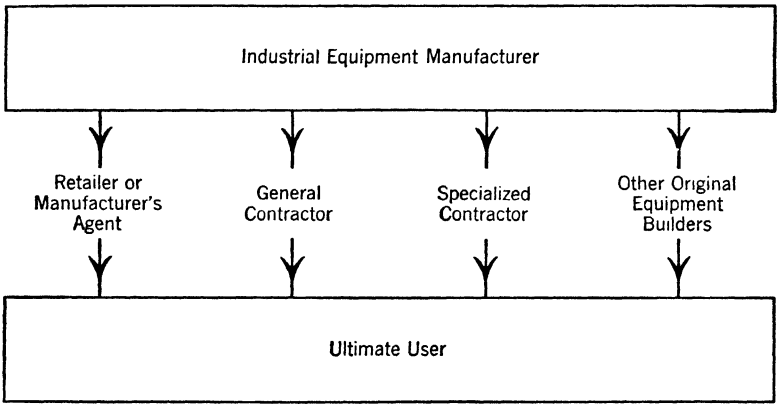


CHART I. Illustrating the common paths followed in the flow of apparatus from manufacturer to user.

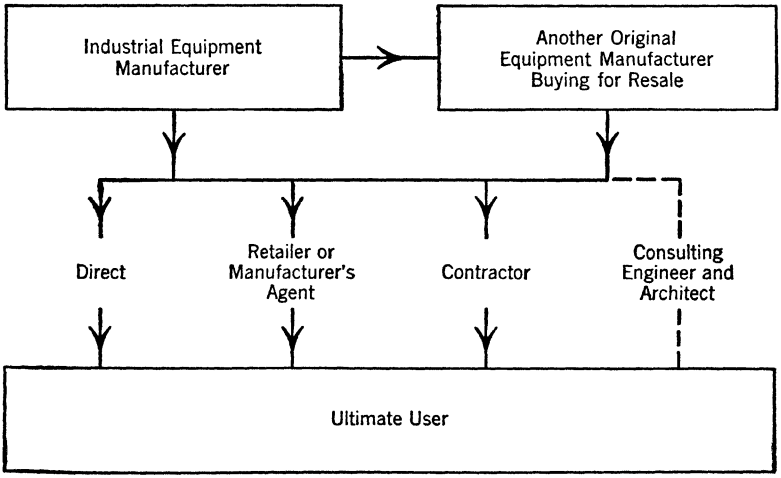


CHART II. Illustrating the common paths followed by an equipment manufacturer who sells his apparatus extensively to another original equipment manufacturer, who in turn sells his completed apparatus through similar channels.

Characteristics of the Products Sold

If the sales engineer is not well informed on the characteristics of the product that interest the purchaser and the user, he is in much the same position as the soldier who fails to understand the arms he carries and consequently cannot use them.

Sales engineers fail so often through lack of practical information of distinct interest to the customer, as is illustrated in the following instance:

> *During the active negotiation for the purchase of a Diesel electric-power-generating unit, the sales engineer representing the supplier was closeted with the purchaser's plant engineer and other officials discussing the merits of the apparatus offered. Conversation turned to the anticipated life of the equipment, and the ease of making repairs and assembling renewal parts when necessary. During the discussion, the main bearings of the unit received considerable attention, and the sales engineer was questioned about the details of bearing construction, including materials employed, pressures encountered, methods of lubrication, and means of replacement. These were obviously important questions from the standpoint of bearing life and cost of renewal. The sales engineer's data were hazy, several vital facts were missing, and little could be learned by the prospective purchaser about the experience of others who had in use similar power-generating units. Confidence in the sales engineer was at once shaken owing to doubt in the buyer's mind, and as a result very little consideration was given to the sales engineer's proposal.*

Advantages to the customers resulting from the product count for little in selling unless they are clearly expressed and specifically pointed out to show value to the purchaser and operator. These

advantages must be expressed in tangible terms, for purchasers buy apparatus principally to make a profit from the service it will render.

The successful sales engineer is familiar with the apparatus from several angles:

Why it is designed as it is, and the benefits of design features interpreted into results of interest to the customer.

The steps taken in the manufacture that affect its successful operation.

Just how it functions, both under normal conditions and those encountered less frequently.

Its various uses, and the relation it bears to other products that the sales engineer does not furnish but are associated with operations or processes involved.

One sales engineer in the Middle West sells machines for buffing and polishing metal parts in large quantities. Much of his market comes from automobile manufacturers and companies making small, highly finished parts. Instead of approaching the prospect with catalogs and data describing the machine he sells, and discussing their construction and use, he obtains samples of the product both before and after the existing finishing processes are performed. In most cases, too, the prospect will tell him his present finishing costs. The rough sample parts are then finished at this sales engineer's factory headquarters. These finished parts can be compared with those furnished by the prospect, to show what improvement has been made.

After this is done, the sales engineer submits these finished parts to the prospect together with cost estimates of doing the work on the machine he proposes to supply. Assuming the results show a better finished product at existing and better costs, his remaining sales effort is largely devoted to proving that his machine can do this work continuously, with little upkeep expense, and that the investment will justify the savings.

Other arguments may be used in selling each prospect, but the entire approach is not one of explaining the advantages of the machine, but rather the advantages of its use in the customer's hands and under his peculiar conditions.

Design, from the viewpoint of the sales engineer, may refer to the design of a piece of apparatus, a structure, or a system of related equipment calculated to produce a desired result, as, for instance, a mill layout for rolling sheet steel with all the necessary equipment. Design as applying to any one of these is always, in the last analysis, a matter of compromise. The successful designing engineer produces a *balanced* design, weighing characteristics in accordance with their importance to the ultimate user. The relative importance of a given set of design factors interests the sales engineer greatly, because in evaluating the performance the various features are often treated one at a time; and yet what is paramount in importance is the combination of features to provide the best over-all performance.

What does the purchaser buy? In a piece of apparatus, he buys not weight, size, efficiency, close tolerances, automatic lubrication, nor cast iron. Instead, he buys economical performance under all conditions of work, and the various supporting services the supplier can render, included among which are engineering recommendations. Only occasionally is one particular design feature of outstanding importance.

Some purchasers, in order to place pressure upon the supplier to provide the most for the money, select the highest rated individual features applying to apparatus offered by any of a number of different suppliers. He holds this out as a goal to be met. No supplier can furnish a piece of equipment that will have the highest rating on all the features by which the equipment is judged. What is to be most desired is a correct balance of these values based upon the kind of service required. Any feature of performance rendered by a particular design may be highly emphasized, but it can be attained only at the expense of other desirable features. The sales engineer must be sufficiently familiar with the various features of design which interest the user in order to recognize and use this principle.

Every sales engineer should sit down with those who design the product he sells and get a picture of how finished designs are evolved on the basis of experimentation and tests. This gives him confidence in the product he sells and some very definite reasons for the choice of materials and the final determination of structures. With this information he dramatizes the real advan-

tages to be realized in actual operation. Customers often ask, "Why don't you construct your apparatus this or that way?" The sales engineer must have a ready and correct reply. Learning how designs are perfected step by step, he is able to show purchasers the "how" and the "why" of the existing design. He can picture the labor and care that have been required in the design's perfection.

A new bakery is being erected, and a sales engineer selling bakery machinery is actively on the job. He has already interviewed both the architect and the engineer employed by the company. Being familiar with modern bakeries and bakery practices and having assisted in engineering a number of installations where his equipment has been used, he is in a position to render valuable assistance to these men. Having thus established the confidence of the purchaser, he is confronted with the problem of establishing a conviction that the equipment that he sells has distinctive merits in design. What interests the purchaser most is getting equipment which will be efficient and economical in the use of space, power, and materials; reliable and rapid in its cycle of operation; easily and quickly installed and repaired if anything goes wrong; clean, convenient, and safe for employees; and attractive, so as to be of publicity value to numerous visitors who inspect it and to preserve a high level of morale and pride on the part of the employees.

Since the engineers of this baking enterprise understand the construction and operation of bakery machinery, the sales engineer has no difficulty in gaining their attention in a discussion of the features of design in his machines. He starts with the general construction of the machine, explaining in detail the materials used, methods of drive employed, construction of mechanical parts, bearings, etc., and transmission of power. Records of other successful users enable him to support the merits of his claims. He explains methods of operation and of repair. Being familiar with the operator's function he establishes the ease with which his machines are operated. Finally he explains matters of contour and finish. In demonstrating all these points of design and knowing exactly what interests the

purchaser and what does not, he translates each design feature into terms of desired results for the particular customer.

In considering manufacture, every sales engineer should understand just how the product is built. Spending some time in the production divisions of his plant, he can spot certain steps that are taken where care and exactness are exemplified. Carrying with him a few interesting points, he can establish these in his customer's mind and show practical operating advantages which create confidence both in the product and in its supplier.

A sales engineer selling small ventilating units which are required to operate very smoothly and quietly spent some time in the factory observing how these units were made and tested. Definite life tests had established the benefits of dynamic balancing of fan parts, and the resultant decrease in wear and increase in life of the bearings had been evaluated. Similar tests in a soundproof room had shown the reduced operating noise resulting from a balancing of the fan parts. The sales engineer learned the difference between static and dynamic balance and the merits of dynamic as compared with static balance. Armed with this information, and small samples of fan wheels balanced both ways, he was able to illustrate to prospective purchasers the advantage to them of the added care and expense involved in the production of dynamically balanced parts.

Useful facts upon the product he sells and an interpretation of them into the process requirements of the individual purchaser serve as the best sales armament that a sales engineer can possess. Those who purchase today are not inveigled or cajoled into buying. They buy for a purpose and upon the basis of factual information; and the sales engineer who can furnish facts on his product clearly and promptly is always in a preferred position. This is well illustrated in the following incident:

A sales engineer selling lighting equipment is attempting to sell lamps to a power company for use in lighting a village. The power company objects strenuously to a price differential of $5 between the sales engineer's lamp which sells for $31 and that of his competitor whose product sells for only $26.

To meet this objection, the sales engineer has his own organi-

zation test the comparative light output of his own and the competitor's 6,000-lumen lamp, the size under consideration. The laboratory report shows the sales engineer's lamp to have 6 per cent more effective light output than the competitor's unit.

Armed with this information of efficiencies, the sales engineer again interviews the purchasing department and engineers of the power company. He reviews the mechanical and maintenance advantages of his lamp, and then inquires if the power people would like to make an 800 per cent return on an investment.

This arouses interest and provides an opening for the sales engineer to introduce his laboratory's findings upon lamp efficiency.

The sales engineer then proceeds to establish the fact that ten years represents the normal lifetime of both his lamp and that of his competitors, a conclusion readily agreed to by the purchaser. Furthermore, the 6,000-lumen lamp under consideration, and appearing in the specification, delivers approximately 2,400 effective lumens of light on the city streets.

During the life of the lamp as stipulated and under local conditions of operation, each lamp will burn on the average 350 hours per month, or 42,000 hours during the lamp's lifetime.

Naturally the power company desires to give to the city the most light for the least outlay. The extra 6 per cent efficiency of the sales engineer's lamp over that of his competitor amounts to $0.06 \times 2{,}400$ or 144 more lumens of light for every hour the lamp burns. Over a period of ten years this amounts to $4{,}200 \times 144$ or 6,048,000 extra lumen hours of light. This would be equivalent to giving the city 2,520 hours or 7½ months' additional service just for the added investment of $5 per lamp. On the basis of existing rates, this would approximate $40 per lamp saving, or 800 per cent of the added investment.

In this instance the sales engineer was able to obtain the contract for lamps by a demonstrated result affecting the purchaser's pocketbook, based upon a knowledge of the product offered.

The sales engineer in addition to knowing the features of the products he sells must also know the best possible method of applying it to a solution of the problem at hand.

In a factory making plastic materials, several large mixing machines are employed. These must be operated at a very low rate of speed, and a variation in the rate of speed must be provided to meet the needs of different classes of materials handled. Such speed reduction and variation have been accomplished by a series of belts and gears which take up considerable space, are noisy, dangerous, and inefficient. A sales engineer representing a manufacturer of variable-speed gear reduction units studies the problem. He is in a position to furnish units which have proved their usefulness and performance for similar classes of service. The chief problem before the sales engineer is that of properly applying suitable units to each mixing machine so that they form a neat and efficient link between the source of power available at a high rate of speed and the mixing machine itself. The sales engineer after some study devises a method of substituting single variable-speed gear reduction units for the existing complicated equipment and is able to establish the wisdom of the investment on a dollar basis largely by his engineering skill.

One important reason why the sales engineer must know the features of construction and operation of the equipment he sells is that individual purchasers differ in their opinions of the importance of various characteristics of the equipment being sold. Their experiences in using or maintaining the equipment have differed. In selecting machinery, for instance, the purchaser's engineer or shop superintendent may emphasize certain features of construction or operation. One may be "bearing conscious" because in using certain types of rotary machinery trouble with bearings has been experienced. Another may be "balance conscious" because difficulties have been caused by machinery out of balance. Still another may be "power conscious" because some equipment that he has bought has failed under overloads. Usually, with the limited experience of any individual, each has become prejudiced in favor of or against some distinct feature. Successful sales pro-

cedure calls for a quick recognition of these individual inclinations and prejudices.

Next in importance to the sales engineer's familiarity with the products sold, is a knowledge of the products offered by his competitors. If he is thoroughly familiar with the strong and weak points of competitive apparatus he can formulate intelligent selling plans for his own products.

Organized Methods of Purchasing

Most people buy commodities for their own use in a very haphazard manner. Selection is based upon the desire for one product over another, and the possibility of getting the most personal satisfaction from the dollar spent.

Purchasing by industry is quite a different matter. Though every industrial enterprise is a separate business entity, as such, in the true sense of the word, it never buys. Individuals always do the buying. They base their decisions only on what they know, and their knowledge may be limited and influenced to a degree by prejudice. Personal desire may interfere with obtaining the most favorable results to their company from the viewpoint of profits. Since in any enterprise a large group of people are interested in profits, there are many who take an interest in what is bought and influence the purchase one way or another.

Buying methods and routine of placing orders must not be confused. Correctly preparing the order, placing it, checking and following it, are important functions. But selecting the type and make of apparatus to be bought is determined usually by a group of persons. Their opinions contribute to a final decision.

To simplify our study of organized buying, let us consider a hypothetical example, which involves the sale of apparatus to an original equipment manufacturer. This company builds printing

presses. It has sold a large press to a printing concern and must buy the complete electrical equipment to drive it.

Let us say that one man *owns* this manufacturer of printing presses, and he hires a man to *manage* his company. The manager employs six men, one each to *design* the presses, to *manufacture* them, to *purchase* what is needed, to *handle the funds* for the operation, to *sell* the presses, and to act as a maintenance *service engineer.*

The sales engineer upon whom our interest centers represents an electrical manufacturer. He is anxious to obtain the order for the electrical equipment required for the press. If this prospective purchaser were new to him, he might conclude that the purchasing man made the selection. He soon finds that, though this purchasing agent regularly buys the standardized needs of his company, for an item such as technical electric drives other men enter in. He may next conclude that the man responsible for manufacture will make the decision. But soon he finds that the designer of the printing press has opinions and influence. Next the financial man is involved, because he is interested in wise expenditures. Finally he concludes that all eight men have some opinion and some influence. He finds that even the salesman selling this press is concerned both in the reputation of the electrical manufacturer and in his ability to service what is sold.

This electrical equipment sales engineer finds a ninth buying force is involved. The printing company that buys the press is an important factor. He can even get the press purchaser to specify and demand his make of electrical equipment.

We find, therefore, that all nine forces, in the above instance, to a greater or less degree influence the purchase. Each has his interest and viewpoint. Each does, or can have, a say. Each, over the lunch table or in the office, may speak of the prospective purchase. One opinion may sway another. The final decision may be composite in character.

If we trace through any purchase, we find that these important steps must be taken:

Establishing the existence of the need.
Determining a way of meeting the need through the purchase.
Justifying the expense in preference to other outlays.

Determining and establishing the character of the supplier, the value of his recommendations, and the apparatus offered.

Deciding upon elements of price, terms of payment, guarantee, and delivery.

Performance in getting orders filled correctly and promptly.

The successful sales engineer enters into all or many of these important steps in buying.

Inasmuch as most industrial purchasers, such as manufacturing, mining, construction, and transportation companies, as well as utilities and branches of government, are highly departmentalized, often with locations scattered geographically, the sales engineer is confronted with a complex problem in evaluating the importance of those individuals who influence buying and in carrying his message to each one.

One large manufacturer with scattered plants has a central purchasing department at headquarters and individual purchasing agents at each plant to make minor purchases for local plant requirements. The plant purchasing agent determines what is bought and places orders. All matters of policy are established at headquarters, and all important purchases are made there. In the purchase of important items of machinery and equipment for production purposes, those in charge of production at the individual plant where the equipment is to be used examine the merits of types and sizes of equipment offered by prospective suppliers and express a preference as to what is desired. Their decision is based solely on the merits of the equipment in relation to its proposed use. Such recommendations are sent to the purchasing headquarters, and such proposed selections carry great weight. However, other factors may be pertinent, such as an equitable division of business among suppliers, or the reputation and record of one supplier over another in matters like promptness, dependable delivery, and maintenance. All factors are carefully weighed, including the matter of price, and a decision is reached so that from all standpoints the best results are obtained. From this illustration, the sales engineer will recognize that sales-engineering effort must be concentrated both at the headquarters of the purchaser and at a particular plant.

The most common point of contact in selling is obviously the purchasing department, for there orders assume form and are released. But orders of interest to the sales engineer seldom actually originate at that point or are formulated there. Their creation is where the want exists, and this want may be found or developed by the sales engineer with any or all of the other activities of the organization. Sometimes the want is an evident and positive need. At other times it may be just as vital but unrecognized; and the opportunity of the sales engineer exists for bringing it to light and developing a clear recognition and consciousness of it.

An understanding of the routine of placing orders which emanate from the office of the purchasing agent is likewise of the greatest importance to the sales engineer to enable the company he represents to perform to the satisfaction of the purchaser. He must know what particular requirements in the handling of orders are necessary for his own organization and those of the purchaser. These include many details which must not be overlooked, such as complete identification of the apparatus, price, terms, shipment, approval of plans or drawings, notification to certain individuals regarding progress or completion, and so on. Smooth performance in carrying out these details may mean success and determine satisfactory future business relationships.

Organized methods of buying have improved remarkably. The purchasing agent for a company many years ago was usually only a hard-headed and cold-blooded trader. Today he is generally a pleasant and active person quite familiar with all departmental activities of the company with which he is connected. In many cases, he has been trained both in engineering and in business practice, knows large groups of suppliers, and values their acquaintanceship and aid. Naturally his responsibilities of selection relate more directly to those products that are regularly purchased on the basis of a set specification such as supplies and semi-finished materials. On such items particularly, with a knowledge of buying, markets, prices, and price trends, he can save much for his company. Upon more technical items used in production and construction, he usually places greater reliance on others within his company's ranks, and consequently the sales engineer must develop contact with the others in his customer's organization who may influence purchases.

The Individual Purchaser

Repeatedly I have asked a sales engineer trying to sell a particular company, "What is your selling plan?" Too often I found that he had no plan, and the reply was merely, "I expect to keep on calling—someday I will get a break." It is very good "to keep on calling," but without some definite plan a lot of effort is wasted. Perhaps, too, the purchaser gets tired of his calls that lack shape and focus.

Of course plans alter as circumstances change, but in every case there should be some plan. A selling plan has for its foundation knowledge of the prospect. These are important points to know about each important prospect or customer:

The organization, personnel, and the responsibilities and characteristics of each person influencing purchasing.

The activities of the company, including plants and processes involved.

The financial condition and the financial and business connections of the company.

The policies and plans of the company toward maintenance, replacement, and expansion.

Any specific problems confronting the company that interest the sales engineer as an equipment supplier.

Those influences outside the company that directly affect buying.

The consideration and investigation of these six points become second nature to the successful sales engineer. He follows each of these tracks, searching for knowledge and opportunities of helpfulness. He can never obtain all the information he should have upon the individual customer before he proceeds with his selling effort. Those individuals he meets in carrying on his selling effort continually provide additional sources of information. Of major importance is the development by the sales engineer of

a sales plan based upon the assembly of pertinent facts which are continually gathered and pieced together, no sales resources being ignored.

One successful sales engineer who works systematically and yet wastes no time accumulating and maintaining elaborate or useless records sets about analyzing an important customer in this way:

He maps out the organization briefly on a sheet of paper, starting with the owners or stockholders of the company. Usually, with larger companies, there are so many of these and they are so removed from the company that it is purposeless to give the matter further consideration. On the other hand, with the smaller company, which often is owned by a few persons who may be particularly active and interested in the business, the owners may influence buying and therefore deserve cultivation in order to obtain their good will.

He jots down the list of directors and determines which ones are active, for they may be persons influential in buying, in which case their acquaintanceship and good will are valuable. Perhaps of these there is an executive committee which enters into management in an intimate way, and these are the most active directors.

Next, he lists the officers of the company, indicating the responsibility of each. Major decisions in buying may come before them as a group or as individual officers of the company. Likewise, decisions relative to important financial expenditures for expansion or replacement may be in their hands.

He then sets down the department heads and important assisting personnel, so that he has a picture of the active personnel and their assigned duties.

If consulting engineers or contracting companies are regularly or occasionally employed by the company, these too are noted.

The relative importance of these individuals to the sales engineer depends upon the product or service that he is prepared to furnish, and the methods pursued by the purchasing company in buying—which directs the sales engineer to spot key men and reach them according to their individual interests. One should remember that titles applying to individuals are often mislead-

ing as indicators of responsibility or influence. For instance, the secretary or even the treasurer of a small company may direct the function of buying. Assistants may be more active than principals, or one individual may lean heavily upon another for advice.

The particular product lines that the customer manufactures, or the kinds of services rendered, are also listed. Here, in the case of the larger customers, the sales engineer encounters enterprises with scattered plants or properties; e.g., a mining company may operate several mines, a petroleum company several refineries, or a public utility a number of generating and distribution stations. In such organizations there is usually an established method followed in making major extensions or improvements, and also continuing maintenance, both of which interest the sales engineer in obtaining business. Such methods are carefully analyzed and perhaps recorded, for they serve as a guide to the sales engineer and his associates in making progress.

How does the sales engineer obtain this information? We have seen how he might survey the market area assigned to him. Following the selection of the most important customers to work upon, he investigates them individually. Copies of annual reports to stockholders are often illuminating and useful as a start. But what counts most is building up a group of essential facts from personal contact with people within the customer organization and with outsiders who know and deal with him.

Organization Personnel

Continually, we find instances in which the sales engineer, after losing an important order, makes a review of the manner in which he handled the negotiation only to find that he has failed to identify and reach some individual whose opinion and influence were important.

Robert L. Giebel, president of the American Machine Tool Distributor's Association, in a talk to a group of sales engineers, made the following observations:

Years ago I had the responsibility of calling on a big railroad company. We received all of their inquiries, and after we quoted I'd interview the superin-

tendent of motor power, the master mechanic, the superintendent of the shop and various foremen, but always lost the orders. While I had a lot to learn about selling, I knew I couldn't be that bad. I finally learned from a lathe operator the name of a man in the shop who had no title but was considered an authority on machine tools by all his superiors. He was making the actual decisions.

I know another large corporation which has as president a man who worked himself up from a machinist. He insists on selecting the machine tools and, while a salesman must do his missionary work with the foreman, the superintendent, and the purchasing agent, he hasn't a chance of getting the order unless he finishes his job by selling that president.

It takes time and effort to identify the personnel of a company and evaluate the duties, importance, and influence of each individual, particularly in the larger organizations. This can be done only through acquaintanceship and personal contact. Companies have their own organization charts and personnel lists which are helpful. These the sales engineer can usually obtain through some friendly source.

Knowing the purchaser's personnel, the sales engineer can determine the purchaser's policies and plans for maintenance and expansion. The best-managed companies are realizing the many advantages of spending for plant rehabilitation when business is in a state of inactivity. Expansion programs are planned well in advance and long before public announcements appear. Knowing a purchaser's personnel enables the sales engineer to establish himself in an advanced position as a possible supplier.

In his work, the sales engineer encounters all kinds of personalities. This is one reason why the job is so interesting to one who enjoys association with people. People attract most of us more than things do, because they are responsive and their reactions cannot always be accurately predetermined. By the law of averages, however, the majority of people react in a definite way to a given stimulation, and a knowledge of popular reactions serves as the foundation for sales procedure. For instance, business men, as well as psychologists, have long ago established and proved the law that more can be accomplished by friendliness, good will, and fellowship than by antagonism or animosity. Again, people will respond more favorably to a suggestion than they will to a command, or if they are listened to and respected

than if they are ignored and belittled. With such principles as these, one individual is able to influence another.

But, the sales engineer must go further than an understanding and use of general principles such as these, for most of his effort is with individuals engaged in particular kinds of work who are, on the average, fully as intelligent and appreciative as himself, but who possess differing interests and mental habits.

Exploring an individual through acquaintanceship shows us his character in the worlds that attract him, the business and social worlds, and the world of family and home. Many have felt that there is a definite objection to establishing social relations for the purpose of business; but in the industrial world in which we live our friendships and acquaintances are often largely made through business contacts, and these can be as genuine and sincere as those made in other ways. As long as transactions benefit both parties, no serious objection to this can be reasonably supported; for the sales engineer must guard the interests of his customer as he does his own.

The sales engineer's life is continually one of surprises, and often what startles him most are the avocations and hobbies of those whose daily life is apparently completely tied up in their business. It is often only by chance that such interests are discovered. The common forms of sport and recreation interest a large number, and such attractions can be easily identified. However, a surprising number of individuals are interested in stamp collecting, bird study, collecting first editions or autographs, arts and crafts pursued in the home, and the like. On such common interests firm friendships are often built. The following true incident shows the value of studying the habits of the individual, aside from his daily work:

Several years ago the head of a large industrial purchasing department in southern Ohio had the reputation of being a most difficult man to reach by salesmen representing prospective suppliers. He took a strong hand in all purchasing and was disliked by all sales representatives on account of his crabbed manner and habit of belittling all such visitors and placing them always on the defensive. One particular salesman, who had much business at stake, was determined he would get under

this gentleman's skin. Upon one of his unsuccessful visits, he noticed lying on this executive's desk, on top of the morning paper, a new book on moths. As he left the office, he mentioned this to the secretary and discovered that her boss was quite a naturalist and at the particular time was engrossed in a study of butterflies and moths. The salesman was quick to discover an opportunity and actually spent several evenings at the library gaining a rather superficial knowledge of this subject. A few weeks later, when he was again in the office, he dropped a remark or two regarding this pet subject, which immediately interested the official and started him on a long discourse of certain varieties of moths native to the tropics. It ended with an invitation for the salesman to take dinner at the official's home and inspect an extensive collection of mounted specimens. In this unusual way a friendship was developed, and a way opened to valuable business.

Every day the sales engineer, in his business, meets new people. He must be able readily to determine their responsibilities, experience, and interests. Knowing their interests, he has an opportunity for an exchange of ideas and experiences, and the foundation for friendly understanding. One reason why the weather is a matter of familiar comment is that it interests everyone; but, as a ground for common interest, it soon exhausts itself. With a deep common interest established, opportunity comes for determining the character of the person, his likes and dislikes, and his habits of thought and action.

The first step, then, is to understand the *business interests* of the individual. The shop superintendent is interested in operation, volume, speed, quality, reliability, and cost of production, as well as in the comfort and satisfaction of his workmen. These being his interests, they must become the interests of the sales engineer supplying shop equipment, for then a common interest is established. The architect or designing engineer of a structure is interested in providing the best possible structure within the appropriation. He usually endeavors to prepare his specifications so that he will attain this end and satisfy his clients. The purchasing agent's interest is to buy the best available products for the lowest price, and also to establish a stable source of

supply which fulfills its obligations with the least trouble to his concern and the least worry to him.

The second step is to understand the *mental habits* and *personality* of the individual—in short, his likes and dislikes, his manner of reasoning, and the way his mind reacts to impressions. Some individuals are slow and methodical in their procedure, giving careful thought to engineering details; others are hasty and inclined to jump to conclusions. In dealing with the former, a wealth of facts and figures, as well as patience, are needed. With the latter, fundamental facts, concisely presented, are required with perhaps a word as to the pitfalls of too hasty action.

The sales engineer should never be deceived by such superficial matters as dress and language, particularly in older people. He will find many a man with a rough outside and an uncouth tongue who has the wisdom of Solomon and an everlasting interest in his work and his concern. Many individuals are highly opinionated, and with this quality often goes conceit. Such persons are governed more by suggestion than by direct opposition and are subject to skill in diplomacy. No reliable formula exists for the analysis of the individual, but one thing is sure—the successful sales engineer must be a student of human traits and skilled in interpreting the actions of people.

The successful sales engineer adjusts himself to the person he serves, with the skill of both a detective and a diplomat, and yet possesses the strength to object when good business or technical principles are endangered. Fortunately, he can never permanently injure his position in a business way by adhering to a sound code of ethics or conduct.

Investigating Plants and Processes

It is a never-failing rule that the most successful sales engineers are those who are constantly in touch with plant and property operations. Intimacy with processes and production and operating personnel yields the greatest dividends, because the active mind grasps and visualizes the problems of the purchaser in a practical way that would be impossible to one working only at a desk. Problems of production, often unknown to those in the front office, are here encountered and solved. Here, with the operating men, the sales engineer finds his greatest opportunity

for practical service and for instilling a desire for the service given by the products that he sells.

A sales engineer trained in the application of electric arc welding equipment investigated in detail the mechanical design of machine tools made by a machinery builder. The framework of these tools was of large and heavy iron castings. The salesman established the fact that many of these frame constructions could be made from steel plate which could be cut and welded together to replace the cast structure adequately. Definite advantages of the new form of construction were established which related to such factors as greater strength, more rapid manufacture, decreased stocks of material through flexibility of frame design, lighter weights, and even improved appearance. The new frame construction was, in brief, shown to be better and cheaper. The new design and process of manufacture was adopted, and the sales engineer obtained a substantial order for arc welding machinery plus continuing orders for electrodes used in the process. Thus, again, he had benefited his customer and created business for the concern he represented, largely by getting into the purchaser's plant and working with shop personnel.

Another experienced sales engineer, connected with a large manufacturer of a recognized and popular alloy, was impressed with the opportunities that existed for the use of this alloy by another manufacturer engaged in designing and building an extensive line of machinery and equipment. From a preliminary survey of the second company's products, the sales engineer was convinced that this alloy could be used to advantage in certain of them. He asked for an interview with the vice president of the company who had charge of engineering design. He showed him what the preliminary survey disclosed and asked for an opportunity to spend several days in the company's plant investigating further uses for his alloy, and a chance to discuss the matter with those in charge of design and manufacture. This request was granted, and the sales engineer set about his work, which showed how design could be improved, manufacture simplified, and products improved if the alloy were used. The result was the adoption of this alloy in several

instances and the creation of valuable repeat business for the concern represented by the sales engineer.

Some years ago, a young sales engineer for an electrical-apparatus manufacturer visited a machinery manufacturer whose machines were equipped with motors. He called on the purchasing agent and presented to him the advantages of buying his product and services. He was told that entire satisfaction existed with the present electric motor supplier as to product, price, and supplier's performance. It so happened that toward the close of the interview the purchasing agent was interrupted by his assistant on a matter requiring immediate attention. The salesman, seeking an opportunity to collect his thoughts and develop his sales plans, asked for an opportunity to go through the manufacturing plant. This request was granted. Passing down the aisles of the plant, he came across a department where motors that had been in service were undergoing repair, and he immediately fell to talking with the foreman. The foreman was proud of the kind and volume of work done. The salesman immediately discovered that the percentage of trouble with the motors was far too high but that the purchasing company itself was entirely unconscious of the fact that its difficulties were abnormal. Returning, later, to the office of the purchasing agent, the sales engineer was in a greatly fortified position and an opportunity had been created which finally resulted in his obtaining a substantial share of the business. These purchases were not made for plant use but for resale. Getting into the plant had brought to light a condition which made possible a focusing of sales effort. Intelligent sales procedure was now possible with those individuals in the purchaser's organization who designed, manufactured, sold, and serviced the product built.

Financial Conditions and Connections of the Purchaser

Never before have the financial resources of the purchasing company been so important to the sales engineer as today. This is because an increasingly large proportion of capital is going into productive equipment or organized distribution effort. Usually every department head within an organization is desirous of ob-

taining additional funds for this or that replacement or new project. Usually, with limited funds available, management is faced with the problem of selecting those activities from which the return will be the greatest. In a world of rapid change through invention and improvement, investments for instruments of production or major sales-promotional programs may, if delayed, rapidly lose their value. Substantial profits must be quickly made on capital thus invested. Those within the purchasing company who authorize the expenditure of funds want to know very definitely and accurately just how, where, and when these funds are to be spent and what the probable return will be before they proceed to appropriate such funds. Funds must be available, and their allocation must take the very best form of investment.

The sales engineer is interested in knowing that his company, as a supplier, will be paid for what is sold. Usually, he needs to go no further than knowing the general credit standing of the purchasing company he is dealing with to be assured of payment on his sales.

Major improvements, involving products he can supply, should create a very definite interest on his part to find out whether the proposed project is economically sound, for he may become a party to satisfying an economic need. Often, through knowledge and skill, the sales engineer can bring to light this economic need where it has not formerly been recognized by the purchaser. In such instances, he is the one who creates business for the company he represents, and profits for the company to whom he sells. No better reward can he receive for his effort than the purchaser's statement, "We could not have spent our money in a more profitable way."

Not long ago, a sales engineer was sent to promote the use of power-house equipment at several paper mills in one of our northern states. After diligently explaining the merits of the products he attempted to sell, he found little response from the various mill engineers and superintendents. He fell upon the idea of making a close study of the financial resources of a few of the larger mills and to do so made contact with local banks with which these mills had connections. He selected three of the mills that had idle funds, and, with further technical assist-

ance from his own firm, a complete engineering-economy study was made of the steam and power requirements of each mill upon the basis of the manufacturing processes employed in each. This work was pursued in cooperation with the mill superintendents and engineers. The results were in the form of final recommendations made to the management and financial heads of these companies as to the wise expenditure of idle and, in the case of one company, borrowed capital. The recommendations were rechecked and found to be sound, and purchases of new equipment were approved.

The banks with which a purchaser does business serve as a valuable source of information for the sales engineer, not only in assisting to establish the credit rating of the company but also in furnishing information about the company's plans, personnel, and policies. Particularly is this true in smaller centers where bank officials keep their ears close to the ground on all matters of local business.

A sales engineer handling textile machinery in North Carolina heard that a textile plant near by was considering extending its facilities. He at once saw the manager of the mill, who confirmed this rumor, and set about analyzing the new project with the plant engineer. Economy studies were made and considerable work done in preparing a proposal covering the equipment recommended.

A prompt decision to proceed was not forthcoming, and the sales engineer grew suspicious that some unforeseen obstacle was causing the delay. Since this particular southern property was owned by business interests in the North, the sales engineer corresponded with his associates in that part of the country only to find that the financial condition of the company, as a whole, was in a precarious condition, and the proposed plans of development in the South had as its principal purpose that of inflating the stock of the company so that additional funds could be obtained. Had the sales engineer found this out beforehand, he would have spent neither time nor money on an engineering investigation of the project.

Most successful companies can find no more profitable way of investing a share of their profits or available funds than in their

own businesses, for every business move is primarily nothing more or less than the wise investment of funds. Therefore, the sales engineer's success usually comes from working out with the purchaser definite figures that will represent a justifiable return on the investment. As a check to such figures, he usually can refer to purchases by other concerns, the results of which have been established by experience.

Policies and Plans toward Maintenance, Replacement, and Expansion

Capable management of any enterprise makes appropriations for expenditures where the greatest return from the investment will be realized. A choice of opportunities invariably presents itself. In determining how funds are allocated, for maintenance, replacement, or expansion, the sales engineer can be of direct influence and help.

In an old manufacturing plant in the Middle West, there were three outstanding needs that were recognized by management: a new system of plant and office illumination, the installation of materials-handling equipment in the shape of conveyors and small hoists, and the establishment of a company cafeteria for employees. It so happened that each of such expenditures required an almost equal investment. Which expenditure should receive first consideration? The greatest direct savings, in the eyes of the management after considering the matter from all angles, appeared to come from the purchase and installation of materials-handling equipment, for this would show prompt and definite economy in manufacture. The management's attention had been focused upon this improvement and had before it an exact tabulation of savings in relation to outlay, through the careful work of a sales engineer representing a manufacturer of materials-handling equipment. Knowing the organization and plant, he had foreseen the need, and, with the aid of the factory superintendent and works engineer, he had developed a proposed installation plan and established a definite and substantial saving which fully justified the outlay. He had also gained the confidence of the financial men in the company whose opinions received serious attention on the part

of the management, and made it possible for them to visualize the wisdom of this investment. Knowing both the general appropriation available for the current year and also the anxiety of the management to conserve its liquid assets, the sales engineer had set about in advance to direct the attention of all important individuals connected with the company to the importance of this individual need and the benefits that would result in the expenditure. In this way, not only was the appropriation directed to fill this need rather than either of the others but also his particular proposal was accepted.

It is of importance, as we have seen, that the sales engineer follow the financial position of an enterprise, for in this way he can match, with the need, the availability of funds to meet the need. In matters of public works this is particularly important, because many extensions are made through borrowed money.

One sales engineer representing a manufacturer of sewage-disposal equipment had realized for some time a need of a sewage-disposal plant in one of the towns he visited. The town was unable to pay for this from its treasury supported by taxes. A bond issue of $200,000 would be required. From a study of local conditions, this sales engineer determined that the necessity was real and the benefits to the community would justify the expense. Working with the city engineers, he developed a plan which outlined methods of accomplishment and results to be obtained. This was presented individually to each member of the town council, and, at a meeting of this group in the town hall later, the city engineer presented the plan. The program was discussed step by step, the sales engineer supporting the city engineer's arguments by illustrating what had been accomplished in other towns where conditions were similar and where sewage-disposal plants had been installed. It was finally decided to lay the matter before the people; a bond issue was authorized, and the project went through. Although public bids were required, this sales engineer was in a preferred position owing to his familiarity with the project from first to last, and the service he had rendered the city officials in clearly establishing the need and an economical method of meeting it.

All well-operated enterprises set up expenditure budgets. Usually these can be reviewed by the sales engineer who has the confidence of the purchasing company's management, and he can thus check sales-engineering possibilities. For instance, some sales engineers gain the confidence of the factory management of an enterprise so completely that they are actually consulted when the factory operating budget is being prepared. Not only do opportunities come to the sales engineer in establishing needs for expansion and ways and means of meeting them but also the need appears for his services and products in the maintenance of existing apparatus and equipment.

Specific Problems Which Confront an Enterprise

Difficulties which in some way hinder the success of an enterprise almost always exist. These particularly interest the sales engineer when they fall within his scope of activity, for they represent sales opportunities. Moreover, any useful suggestion that can be made helps the position of the sales engineer enormously, because it establishes in the mind of the purchaser his resourcefulness and also his interest in the particular client. Sometimes rendering assistance in a small way produces important results, as the following incident shows:

A representative of a manufacturer of electric wiring devices had an office on one of the upper floors of a bank building. Upon entering the building one morning, this representative saw some smoke in the outer partitioned office of the bank president. It was caused by a defective switch which was creating a short circuit in the electrical system. He immediately stepped into the office, disconnected the wiring, went to his own office on an upper floor, and returned with a switch from his small stock of samples. He replaced the defective switch with the new one and exchanged a friendly greeting with the bank president. The resourcefulness and interest of this sales engineer so impressed the bank president that the two fell into conversation. The bank president mentioned a large building project that his bank was financing. It was not long before he had the construction contractor on the phone asking him to

specify this sales engineer's products in bids submitted by subcontractors covering the electrical wiring.

Suggestions that overcome difficulties may take a variety of forms. A tip to the sales engineer's client pointing out a prospective purchaser for the client's products, particularly when he is in dire need of business; a possible improvement in the product or service the client furnishes; or a better way of performing a process or accomplishing some other result—these are often valuable avenues of helpfulness.

A sales engineer representing a manufacturer of industrial annealing furnaces had been unsuccessful in interesting the plant superintendent of an important equipment builder in the wisdom of annealing certain pressed-metal elements which formed a structural part of the equipment that the company manufactured and sold. The sales engineer, after a technical study, felt convinced that troubles were being experienced by ultimate purchasers of this equipment, although he could get no one in this manufacturer's organization to admit that such a condition existed. He set about interviewing several important users of this equipment and found his suspicions verified; several breakages had occurred which, in his opinion, could be avoided by the use of an annealing process in manufacture. He recorded such failures and established a reasonable estimate of losses encountered. One purchaser confided in him that such failure had already been reported to the manufacturer, but "apparently there was a difference of opinion between the sales manager and the production manager of the manufacturer, and they were at loggerheads as to the responsibility of the trouble." Armed with the results of this investigation, the sales engineer of the furnace manufacturer in a diplomatic way presented his findings to the two men. The difficulties were brought to the surface, and the sales engineer was given several sample parts of the equipment so that these could be annealed at the furnace-builder's plant and returned for inspection and test. The sales engineer's recommendations were verified, an annealing furnace purchased and put to use, and the difficulty eliminated.

Sales-Engineering Principles

Customers are becoming increasingly weary of the constant effort by many suppliers to obtain business only through the magic spell of sensational sales promotion. Even in the field of merchandising, where emotional appeal has its greatest opportunity for effectiveness, customers are becoming more callous to sales methods of this character. Buyers are continually getting more critical as their range of purchases increases, and as time goes on the masses are better able to select between the true and the false. This truth is illustrated in what took place at an annual meeting of the National Retail Dry Goods Association held in New York when a typical suburban housewife was selected and invited to the meeting to tell the members what she liked and disliked about modern stores and sales methods. To the surprise of many, this typical consumer took definite exception to the characteristic of selling commonly called "glamour" and stated that it was becoming increasingly ineffective by failing to carry conviction to the steady buyer. In short, the stable element in buying cannot permanently be reached by emotional appeal alone. Selling must follow more and more the principle of establishing sound value interpreted in terms of unquestionable benefits to the purchaser.

While the buyer has become more discriminating in his purchasing and more impervious to those sales influences calculated to affect only his emotions, the viewpoint of most of us continues to become more realistic. With our turn toward realism, as well as reason, there has come a greater opportunity for the sales engineer to dramatize sound truths in connection with his equipment and services in a way that will quickly captivate the busy mind of the buyer. Sound ideas carrying benefits to the purchaser can no longer be let fall in a casual manner but must be singled out and emphasized by clarity, brevity, and human appeal.

In establishing sound value in the mind of the buyer, the sales

engineer's effort is guided by one underlying principle. The director of a famous Fifth Avenue department store in New York struck this vital keynote in selling when he said, "*Interest in the purchaser* must be the signpost which guides the actions of every employee in this organization. If an employee cannot take a sincere interest in every potential purchaser and customer and with this interest established be prepared to give before he expects to get, his services are not required." This is particularly true of engineering selling, because the salesman must immediately center his attention on what the ultimate purchaser is trying to accomplish. As he proceeds, he must first consider the problem from the customer's viewpoint in the customer's search for increased profits. When real interest in the purchaser exists, it serves as the basis of genuine enthusiasm. This is not the enthusiasm that demonstrates itself by the mental and verbal gymnastics of the high-pressure salesman, but rather the enthusiasm that drives the sales engineer forward in demonstrating and proving his recommendations and the sound reasoning upon which they rest.

The sales engineer's first step in meeting a sales opportunity is to take an interest in the prospect himself and then to analyze the technical and business conditions that relate to the prospect's problem. From a study of existing conditions and an evaluation of essential and non-essential factors, the best proposed solution is reached.

With facts for reaching the objectives established, the sales engineer attempts to *visualize* the exact benefits that his customer can derive from the use of the sales engineer's products and services and makes these stand out as real advantages from the viewpoint of earnings and profits to the customer.

Lastly, since advantages must carry conviction, the sales engineer determines how best he can *dramatize* the truths he attempts to establish. We all know that the same truth can be expressed in many ways, yet one way may convince whereas another way may fail to influence. Often the simplest, clearest, and homeliest expression carries conviction; the lengthy and elaborate demonstration leaves the listener confused, suspicious, and undecided.

In establishing these three steps of action so pertinent in the advance of the sales engineer toward his objective of obtaining business, he must always bear in mind those principles that guide

the customer's mental processes in forming a favorable opinion of the sales engineer and the proposal he advocates. The purchaser, in trying to attain over-all profit-making results through the purchase, thinks in terms of physical equipment, the ability of the supplier, and the personal qualifications of the sales engineer. These interests can be quickly summarized in the following way:

Interest in the results obtained from the product in use.
Interest in the supplier's ability to render highest degree of performance.
Interest in the individual sales engineer as the reliable and pleasing link connecting the purchaser and the supplier.

The sales engineer in striving for success recognizes the principle of selling the results from a use of the products he offers, the ability of his company to perform, and a confidence on the part of the buyer in himself.

Mr. A. G. Bryant, formerly president of the National Machine Tool Builders' Association, addressing a group of sales engineers, expressed this thought very forcibly. "Don't forget it," he said, "we have got to sell economics. We have got to sell savings. We have got to sell results. What the machine *does* is important."

In looking at the broader aspects of sales engineering and observing a large number of sales engineers at work, certain general principles of procedure are interesting and highly important. The work of the sales engineer may be largely responsive, answering to a need that exists and is recognized, or it may be creative in establishing a need that has been unrecognized.

Responsive Selling

Everywhere we go we find examples of responsive selling. Most retail selling consists largely of reaction on the part of the salesman to the request of the prospective purchaser. It is true that the retail commodity salesman goes through a set of motions that helps to create business for the company he represents, but his work is usually responsive rather than truly creative.

Much of the everyday effort of the sales engineer is expended—reacting to an inquiry received and answering it in an intelligent way, as illustrated in the following instance:

The sales engineer for a machine-tool manufacturer received an inquiry for a single-spindle drill press, naming the type and size required. The sales engineer carefully prepared a letter of quotation specifying what was being offered and quoting price, terms of payment, delivery time, point of shipment, and the length of time during which the quotation remained effective. In the course of a few days, an order was received. Although such an order may rest upon a satisfactory relationship between the supplier and the purchaser which has required sales-engineering effort to establish, it is, nevertheless, an example of responsive selling, for the sales engineer responded to an inquiry received. Upon the particular order no creative sales-engineering effort was expended. Such a transaction, if based upon the establishing of a relationship through sales-engineering effort, is creditable and necessary, for it means that creative work has already been done to make this inquiry flow to this particular supplier in preference to another. The actual reaction to the inquiry, however, in the form of making a quotation is simply a matter of skilled routine, and little of a creative nature has entered in from the viewpoint of the supplier.

Responsive selling is necessary in every industry, for every supplier endeavors to develop business relationships that will create inquiries from possible purchasers. Every inquiry from a potential buyer, irrespective of what cause has promoted it, offers an opportunity for superior sales effort, because the way is open for the exercising of selling skill in all its forms.

Creative Selling

In creative selling, the sales engineer reaches the highest plane of usefulness, because he actually creates new business by uncovering a want heretofore unrecognized. The work of the sales engineer rises from the level of competing for existing business to be placed to that of actually developing business possibilities that never existed before. Business is really created only where the sales engineer through imaginative skill uncovers the need and a way of meeting it that will result in an attractive return on the investment and justify expenditure of capital which otherwise would not be so spent.

In 1934 our steel mills were rolling cold-rolled tin plate at the maximum rate of 400 feet per minute. Only five years later, in 1939, a mill was in operation producing tin plate at a speed of 2,300 feet per minute. The rate has since been increased. This remarkable development was made possible only through the tireless effort and creative ability of machinery builders' sales engineers supplying mechanical and electrical equipment, working in conjunction with machinery designers and steel-mill engineers. Business for mill machinery of all kinds was thus created by devising ways and means of making tin plate faster and better.

Any sales engineer naturally makes every effort to obtain existing business for the product he sells, where the purchaser is conscious of the need and the only decision is what to purchase among available products offered by various suppliers. But, on the other hand, the sales engineer who discerns the need and then demonstrates a method of meeting it holds the strongest possible position as an industrial supplier. To the creative salesman, therefore, business management extends the highest reward. The following instance illustrates this important principle:

A sales engineer for a concern building power-plant equipment visited a manufacturing plant seeking an opportunity to review power-production problems. He found that the company had an annual bill of $12,500, according to the plant records, for condenser cooling water for a large refrigerating and cooling system, the source being the city water supply. Convinced that a saving could be made by installing a cooling-tower system, the sales engineer made a complete estimate of the initial cost of such equipment, and the operating and other costs, including depreciation over 25 years, interest on investment, charges for operation and upkeep, cost of analysis and treatment of the water for harmful impurities, charges for electrical energy to operate pumps and fans, and the cost of water required to supply losses. It was found that a total investment of $60,000 would be required, and the total estimated operating cost of the equipment as itemized would be $9,500, contrasted to $12,500 now spent for water, or a return on the investment of only $3,000 annually or 5 per cent. This, to the management of the manufacturing company, did not justify the expense.

The sales engineer was not satisfied with his work so far, and on further investigation of all operating departments in this plant he discovered three small Diesel engines, all of which required water for cooling. In addition to the air-conditioning system, provision could be made for cooling them effectively, and in so doing the return on the cooling-tower installation would be increased from $3,000 to $4,300, which fully justified its purchase and installation.

By his investigation and study, the sales engineer had created a need and found an efficient method of satisfying it. Business was thus created that directly benefited an existing enterprise. He also established an enthusiastic purchaser who will pass the good word on to others and probably, in the future, require additional equipment offered by this sales engineer.

Without discounting in any way the importance of getting orders where the prospective purchaser is in the market for given products that the supplier can furnish, we must admit that little effort of an original and creative nature is displayed in such instances by the sales engineer. Energy, skill in strategy, and persuasion on the part of the sales engineer are important and creditable factors, but they largely pertain to salesmanship rather than sales engineering. Permanent progress, based upon an outstanding contribution to the success of the customer's operations, comes through a more penetrating skill than that of "selling a bill of goods," for if the sales engineer by persistent effort uncovers a definite need, unrecognized by the purchaser, and fills this need, satisfying his customer's profit-making instinct, he has at once placed himself in a preferred position on immediate as well as on future transactions.

To the supplier, a dollar's worth of business from "response selling" is worth less than a dollar's worth of business from "creative selling," because in the latter case the sales engineer has produced more than a single order. He has established not only a most satisfactory relationship but also an obligation toward him.

Creative selling, at least in the initial transaction, takes more time and effort on the part of the sales engineer than response selling. It is ordinarily economical selling, however, for, in advancing the sales engineer far beyond the competition of others,

it places him in a preferred position in connection with future purchases and establishes a creative accomplishment profoundly influencing other possible buyers.

In a closer study of the principles involved in creative selling we find at once how essential is an intelligent analysis of a customer problem, involving not only the gathering of facts, but also their proper arrangement and evaluation. In such work comes an opportunity to the sales engineer for the contribution of ideas based upon experience, resourcefulness, and mental alertness. Often such creative ideas come simply from the application of "horse sense," as the following instances will illustrate:

Several sales engineers supplying air-conditioning systems were preparing bids on an air-conditioning installation for a concern occuping an old three-story business building. Only portions of each floor were to be served, and space was valuable. All bidders, save one, insisted that certain useful space must be sacrificed and set aside for the machinery and that a considerable amount of work be expended in carrying the piping from floor to floor. The successful bidder made a more careful study of the intricacies of the old building and found not only a small room in the basement that could easily be vacated but also, near it, an old unused flue running to all floors of the building which could be used as a passageway for the vertical piping system. This simple idea saved the purchaser money and gave a greater profit to the successful bidder who advanced the idea.

A sales engineer selling small high-speed air compressors approached an industrial plant equipped with a large air compressor which had been in use for many years. To the average supplier no market existed here for an air compressor of any sort. This sales engineer found, however, that the demand for compressed air in this plant was far below the capacity of the large compressor in use. In making a careful analysis of the amount of compressed air required, the electric power necessary, the maintenance expense of the compressor, and its second-hand value, he found some interesting results. The present large compressor was called upon to operate very infrequently to maintain the tank pressure required. When operating, its electric power requirements were large, particularly in compari-

son to the current requirements for the plant as a whole. Consequently this purchaser of power was penalized by a heavy intermittent "demand charge" for current. This sales engineer was able to show the economy of disposing of the old compressor even at a low price and purchasing a small high-speed compressor. He created business for his concern, and saved money for his customer, by developing and putting to use a simple idea.

One sales engineer discovered in visiting a very small unmechanized metal-working plant, that one old man was employed to hand-finish a particularly important special part of the complete apparatus. This workman had done the same job continuously for twenty years, reaching a high level of skill. No other individual had been trained to do this exacting job. Each year the plant had been shut down to provide a vacation period for all employees. Little thought had been given to what might happen if this skilled old workman were to become incapacitated or die. In such an instance the entire plant and processes would be crippled.

The sales engineer analyzed this man's operation, offered a machine that would greatly simplify the work, even in the hands of an experienced employee, and dramatized what would happen if this operator became incapacitated.

Although a saving could be shown by the sales engineer through the purchase and use of one of his finishing machines, the main reason for sale was to prevent a shutdown of the plant.

Balancing the Investment and Expense Account against Return

The combined business and engineering principles employed by the sales engineer are those of practical economy, for the sales engineer thinks in terms of values. His course of practical reasoning rests upon balancing an investment against earning power less operating and fixed costs. Viewing these through the eyes of the purchaser of equipment, the sales engineer has the task of setting up a balance sheet either in his own mind or on paper, as circumstances may require, and putting all items of cost on one side

and all items of return on the other. A balance sheet such as this will include items of expense and earnings like the following, based on a specified initial investment.

Depreciation due to obsolescence and wear.
Interest on investment.
Operating costs.
Upkeep or maintenance.
Earnings due to savings.
Earnings due to increased output.
Earnings due to improved quality.
Benefits not readily evaluated.

The initial investment for any prospective purchase, though it may require calculation, can usually be determined to a fair degree of accuracy. With this established, the sales engineer proceeds to balance costs against returns.

Depreciation, we have seen, represents the fall in value due to the passing of time and to the use of an investment. There are several methods of figuring depreciation theoretically; in the determination account must be taken not only of the time during which the items purchased will remain in operating shape but also of improved products of a similar type which may become available. The simplest method of figuring depreciation establishes the time when the equipment purchased will become of no value at all and estimates that the loss of value will proceed evenly year by year. This obviously represents an item of continuing cost.

Interest on the investment may also be figured in more than one way. It is customary to consider the percentage of interest return that money would draw if safely invested elsewhere, increasing this to provide for risks involved. Obviously the risks encountered in most equipment investments exceed those of well-secured financial loans.

Operating costs include expenses necessary to maintain operation. For machinery, these costs would include power, lubrication, and other supplies necessary while operating.

Upkeep or maintenance includes inspection, cleaning, necessary repairs, and renewal parts.

Referring now to the return on the investment, we find the following:

Savings may be effected through a use of equipment or services advocated by the sales engineer, in such items as labor and

materials, thus reducing operating costs, upkeep, and maintenance.

Savings may be effected through increased capacity to produce or through greater output.

Savings may also be made in improved results obtained from the item in use, as for instance a machine that will do a higher quality of work than that done formerly.

Benefits not subject to exact calculation may be obtained from an investment; they may affect the personal comfort and satisfaction of the workers or the elimination of risks.

The sales engineer, with such principles as these clearly in mind, can weigh all expenses against all benefits, present them to the purchaser, and assist him in reaching a sound conclusion as to the wisdom of the investment. Again we return to the three principles of analyzing conditions and evaluating facts, visualizing what may be done, and dramatizing the results of proposed accomplishments.

Selective Selling

Selling is not an exact science, for it proceeds through a succession of decisions, many of which are based upon judgment. The market possibilities for a product may be large and sometimes seem unlimited; but the sales engineer, like those who design and produce a product, is called upon to operate efficiently. In fact, we have seen very forcibly that the crying demand today is for more efficient distribution. One important factor in successful selling is, therefore, deciding what to do and what to leave undone. This is particularly true in selecting the class of customer upon which to concentrate.

The intelligent selection of customers involves principles well established by experience. It has often been said that a dollar's worth of business is of the same value, no matter from what source this business comes. This is not true, for a dollar's worth of business that the sales engineer obtains from a substantial and continuous buyer is worth much more than one from a casual and intermittent purchaser. Furthermore, a dollar's worth of business obtained from a *successful* purchaser is worth more than the same amount obtained from an *unsuccessful* one. Established

and reputable purchasers continue to place repeat orders, usually in increasing amounts, and their reputation helps the sales engineer in his work with other customers. The well-established and reputable company, which buys frequently or makes large purchases intermittently, deserves the closest study.

The value of selective selling for the sales engineer cannot be overemphasized. Few sales engineers have the time to do a completely thorough sales-engineering job with every possible purchaser. It has been proved that the greatest progress will come from intelligently selecting the most worth-while tasks to undertake, and then doing them thoroughly and well. The bootblack will get a greater reward from polishing four pairs of shoes than from polishing only one shoe from each of eight pairs. In sales engineering, it costs almost as much in time and effort to lose an order that is striven for as it does to get it. The additional effort required to go 100 per cent of the way instead of 99 per cent of the way is rather small, but what a difference it makes!

Though successful sales engineering depends on selling the advantages of the equipment according to the interests of the prospect, sometimes the product is decidedly novel and employs an entirely new method of accomplishing results. Where the idea involves entirely new principles, a difficult task is usually encountered, for the sales engineer's work is twofold: selling an entirely new way of accomplishing a result and selling a particular product to accomplish this result.

A large manufacturer of electrical equipment developed in the research laboratory a small circuit breaker which would form a part of the distributing panel used in residences and other buildings of all sorts. This device was quite novel, for it did away entirely with fuses. Irrespective of merit, this represented a distinctly new idea, and considerable resistance existed to the introduction of this product on that account. The manufacturer found it desirable to license several other reliable manufacturers to build and sell this same class of product so that joint exploitation would result in a more ready acceptance. The job here was first to sell the idea; after that, to sell the advantages and results from a particular make of product.

Ideas based upon knowledge of product and the operations of customers are in reality the foundation upon which sales engineering is built. This is well illustrated by the following incident, familiar to many, which has perhaps been exaggerated as it passed from one to another, yet which carries a vital truth:

A large complicated machine was installed in a factory; but the owner never could get it to work satisfactorily, and serious losses were experienced. Finally the owner called in an expert of wide reputation. After looking over the machine with great care, he selected a particular point on the machine and gave it a heavy tapping with a hammer. After that it operated satisfactorily. The engineer rendered a bill of $100 for his services, the amount of which startled the owner of the machine and caused him to ask for an itemized statement covering services rendered. The engineer itemized his bill as follows:

For tapping machine with a hammer	$ 1.00
For knowing where to tap	99.00
	$100.00

Many sales engineers are engaged in selling a service rather than products. In the field of consulting engineering, involving an analysis of existing and proposed conditions, he is selling technical and executive skill. His stock in trade is based upon experience, knowledge, and skill, together with a reputation for impartial judgment and ethical practice. He serves his client much as would a lawyer or physician, though he may solicit the use of his services. In so doing a high type of sales engineering is required. Often he may actually specify that certain makes of equipment be used in connection with an installation; to make such a specification requires a thorough knowledge of apparatus and a fair evaluation of its advantages in respect to the interests of the client.

A sales engineer representing a consulting engineering concern which specializes in the field of generation and distribution of power was faced with the task of selling his company's services to an important local baking company that was considering plant enlargement. This baking company originally started in a small way and, with its own engineering talents,

had determined what was considered necessary in the way of steam and electrical equipment. The sales problem, therefore, presented the objectives of first establishing in the minds of the officials of the baking company the advantages of employing outside specialized talents in place of letting individual employees of limited experience perform such services themselves, and secondly, choosing the services of this engineering concern as consultants in preference to other concerns. This sales engineer proceeded in the following manner:

He understood well the principles, processes, and equipment used in the generation, distribution, and utilization of power in its various forms. His knowledge of modern methods and equipment used in larger bakeries, however, was limited, and he promptly familiarized himself in this regard, for to be successful he had to share the interests and talk the language of his prospective client. He made the acquaintance of the officials of this company and gained the good will of the operating engineer who, in the existing plant, had charge of all mechanical and electrical matters. He studied both the existing layout and equipment and the proposed new requirements.

His next step was to prepare and present definite arguments showing the economy to this baking concern of employing specialized engineering ability which would eventually provide a power system exactly suited to the proposed and possible future need. Such arguments were supported by examples of losses in other companies from poorly planned installations made without specialized skill, and also savings due to the initial investment by the management in obtaining expert advice and carefully worked-out plans. With this hurdle overcome, the sales engineer, having gained the confidence of the bakery officials through his helpful and intelligent approach to their problems, presented the abilities and the record of performance of his own organization. This was done by a clear-cut exposition of skill available and illustrated by examples of successful installations engineered, plans promptly executed, and savings actually made.

This sales engineer was successful in selling his concern's service by adopting a logical and diplomatic approach and a procedure that progressed step by step in establishing pertinent and convincing facts.

PART THREE
The Sales Engineer in Action

The Sales Engineer's Job Is to Make Orders

Basically, the sales engineer's main purpose in life is to "make orders." In this respect the sales engineer, as has been said, supports every functional operation conducted by the manufacturer he represents, whether they relate to research, design, manufacture, or accounting. No progress takes place without an order on which to work.

If we trace the history of an individual machine or form of equipment, we find its conception originated in technical research. Then the machine itself is carefully designed. Materials are selected and purchased. The machine is then fabricated. The whole process can be seen—it is real. Finally, it is complete. It is tested, packed, and shipped. Every step is most carefully engineered and executed. Every step adds potential value up to the point of completion. This *potential* value becomes *actual* value only when the machine is put to work and nets a proper return.

How about the order? How do we make orders? We cannot honestly admit that the same care, the same planning, the same careful fabrication goes into the making of an order. Conditions differ because the sales engineer is faced with a variety of human variables. But the principle holds true. Who ever saw the machine 99 per cent complete disappear into thin air and suddenly lose its value? Yet in the case of the order this can and does often happen. Nothing is left but experience, and possibly the prospect's good will and future obligation.

If this comparison has meaning, it points a significant finger at the tremendous importance of planning a sale and using every resource to make an order in the correct way. Above all, the adding of that final 10 per cent or 1 per cent or one tenth of 1 per cent of effort necessary to win the order instead of losing it.

Selling Has Changed

Sales methods since the beginning of this century have undergone some marked changes. The one-price system has become widely established; the purchaser is no longer regarded as one who must be conjoled or tricked into buying, and thereafter avoided; and the persuasiveness of personality has lost much of its superficial importance as a major function in selling, contrasted with product values and supplier's services.

When our great-grandfather, as a young man, bought a suit of clothes, he very likely never expected to pay the initial price asked. He dickered with the salesman, and the purchase resolved itself into a battle of wits. If he was clever and shrewd, he probably got a bargain; if he was dull and unsophisticated, he was likely to be imposed upon. Firm published prices seldom existed, and each transaction was a subject of barter, harking back to the days when people actually traded wares and tried to get the better of each other.

"*Caveat emptor*—let the buyer beware" was a principle in selling, as is illustrated in the following true incident:

Years ago a foreigner was in this country buying machinery. He went to one plant to inspect a machine he had ordered, prior to its acceptance and shipment. When he arrived the machine was on the test block, and the factory engineers had difficulty with it because of its excessive vibration while running. The "old-time" salesman, who had sold it, arrived with the foreigner and marched to the testing floor. After an inspection of the machine, the foreigner, who was not familiar with the apparatus in question, raised objection to the excessive vibration and pointed out that this might be cause for future trouble. The salesman, whose stock in trade was largely an engaging personality and a ready answer, explained, "All our machines vibrate to a considerable degree, because they are designed to exert their utmost in power, and the way this machine acts

simply shows how thoroughly it acknowledges its responsibility and fairly quivers with life and energy in doing its job. You have there an unusually active and powerful machine."

The explanation stuck, the machine was accepted, and the salesman hastened, with the customer, from the test room with a feeling of relief and satisfaction that he had "put one over" on the customer.

A contract, in the old days, was a legal agreement to be lived up to, no matter whether it continued to benefit both parties signing it. It was generally regarded as an instrument only to be enforced, rather than outlining a relationship to benefit both parties.

Since then there has been a continued improvement in the ethics of selling. It has become recognized that a permanent flow of business from established channels is the kind that is most desirable and that this flow can exist only if the purchaser continues to be satisfied. Purchasers have come also to realize that suppliers perform a service in their selling effort, and, for this effort to continue, profitable business must flow to the supplier. Competitive practice receives closer scrutiny, and the value of clean and aggressive competition is now regarded as a constructive rather than as a destructive factor in business.

Selling solely by the art of persuasion and the personality of the salesman is fast disappearing. It is being replaced by a more careful evaluation of the merits of the products sold, an interpretation of those benefits that interest the customer, and concentration upon performance in the fulfillment of recommendations and promises.

Far too many sales engineers today know the product they sell and its uses but do not concentrate upon selling its advantages when it is put to use.

All these changes in sales methods mean that the sales engineer must equip himself for his important work not with a few superficial attributes but with training based upon sound business principles. "Born salesmen" may here and there exist, but the large majority of sales engineers require a personal equipment which can be mastered by those with a reasonable degree of native ability and technical preparation—combined with the *will and courage to do.*

To grasp more clearly the work of the sales engineer, let us see how technical selling has developed. At the start of the present century, very few sales engineers of the day knew much about the product they sold or its application and use. Even less was this true of those they attempted to serve. The sales engineer at that time was usually a messenger of good will, using many of the same methods as the commercial traveler who sold merchandise. His weapons for aggressive approach were largely entertainment and shrewd wit. Skill depended too much on closing a clever deal of benefit only to himself.

As technical products became more common, sales talent responded with a greater knowledge of apparatus to be sold. During the first quarter of the present century, however, a large variety of independent consulting engineers still continued to flourish, assisting the purchaser in the selection, arrangement, and use of apparatus purchased. No extensive interest was taken by the supplier to enter seriously into the problems and processes of the purchaser or assume any degree of responsibility for engineering recommendations toward successful operation. As a matter of fact, up to the year 1930 industry grew so rapidly, with only here and there a short setback, that problems of distribution assumed little significance compared with problems of invention, design, and production.

With the effect of the depression becoming seriously felt in 1930, as we have already observed, all eyes were turned to the increased importance of distribution. This brought about a much keener interest in the purchaser and his needs, and before long we found that skill of the sales engineer no longer was concentrated only upon the apparatus and equipment sold, but was being directed also to assisting the customer in a better solution of his plant and process problems. Selling the *results* became paramount. Both the supplier and the purchaser took on to a great extent many functions of the consulting engineer. Thought was given in the scheme of selling to finding new uses for apparatus and equipment, as well as to performing a variety of new services that would be helpful to the purchaser. The sales engineer no longer discoursed upon the abstract merits of his particular product but devoted his energies to analyzing the operations that engaged the attention of his customer, devising ways and means

of improved efficiency and evaluating the merits of the products he sold in terms of economic advantages.

Wendell E. Whipp, Sidney, Ohio, serving as president of the National Machine Tool Builders Association, in an address in 1939 before the American Gas Association in Cleveland, Ohio, expressed very clearly the new methods that the sales engineer must employ in his work, if he is to be successful.

> All of us engaged in selling should take stock of ourselves and try to determine whether our approach to sales is so shaped as to result in real service to our prospects and, by the same token, to the world at large. Profit? Yes, for profit is the bone and sinew of the capitalistic system—the foundation on which our amazing industrial structure has been built, and without which our civilization would approximate that of the Feudal Era of the Middle Ages.
>
> But, unless you and I can demonstrate to our customers and prospects that we have something to sell—in equipment or service—which will produce a profit for *them*, we do not belong in business. The day has passed when equipment or service can be sold in volume by high pressure methods, by entertaining the buyer, by tricks or gadgets or by personal magnetism or influence.
>
> And that is why you and I must be mindful at all times of the principle of sales application engineering. And this means that we must be diligent in studying our customer's problems, and his needs for equipment or service which will reduce his costs or add to his efficiency—either of which will expand his market, whatever it may be. In other words, we must at all times sell the profit or advantage which our product can produce—rather than the product itself.

Then in 1940 the clouds of war gathered. Industry focused its attention on production. A hungry market pressed the manufacturer to produce more and more. The efforts of the sales engineer were replaced by those of the expediter. A study of marketing methods and a concentration on sales development were largely thrown to the wind.

As the post-war period of replacement came to an end, the importance of efficient selling again assumed its position of major importance. The sales engineer must devote greater attention, not to abstract features of the apparatus he sells, but to results from its use. Besides dollar and cents results, human benefits are to be greatly emphasized. Quality in the new design and manufacture of the apparatus sold are no longer *selling points in themselves*, but *reasons to support* better results to be obtained. Thus the psychology of sales engineering has changed from a psy-

chology typified by "product consciousness" to "customer-profit consciousness." The sales engineer becomes a force that explores and devises "a better way of doing things."

Such a change, as we have previously pointed out, has necessitated a careful study by the sales engineer of industry, its processes, problems, and requirements. The sales engineer now finds it necessary to spend less time at his own desk and more with the purchaser—in his offices and more particularly in his plants and properties, intimately investigating specific unsolved problems. The successful sales engineer is thus a "messenger of efficiency," showing how operations can be performed better and less expensively. "Service to the customer" has taken on a new meaning, for it involves not only the type of service required in meeting commitments already entered into but also rendering engineering assistance in negotiating the sale of equipment to justify its purchase.

To summarize, the methods followed by the sales engineer include selling ideas, selling a form of personalized service, and selling the results that can be derived from the use of a product. The combined advantages of these are based solely upon increased profits and decreased losses to the purchaser.

Values Must Be Established

Values attached to a product or a service can be built up in the human mind. They get there from experience, word of mouth, and sight impressions. Somehow they have been created and continue to guide us in selection and purchase.

The sales engineer establishes value by the use of his imagination and the selection of resources to be employed in selling. He transfers his viewpoint to the viewpoint of and interests of the prospect. He is prone to think of value largely in terms of

the quality of the product he sells. He attaches value to design characteristics such as shaft sizes and bearing dimensions; to material characteristics, such as tool steel or stainless steel; or to manufacturing characteristics, such as accuracy in limits. These are interesting to him and real. He can put his finger on them easily. But the purchaser's interests lie only in what the apparatus itself will do for him when it is installed and operating.

All values are measured by price. Thus we can visualize the establishing of value by imagining a scale before us. On one end is *price,* and on the other *value* in the mind of the prospect. Obviously, the sales engineer's effort is to build up the weight of *value* so that it is greater than *price.* Since value is created not only by facts but also by mental impressions, importance must be attached to the manner in which facts are presented, displayed, and dramatized. Every sales engineer should have the picture in his mind of this value—price scale. When value has been added to make the scale almost level, the supreme effort is to add still more value so that it will outweigh price in the prospect's mind.

Reasons Must Be Identified and Correlated

The successful sales engineer first analyzes the particular conditions surrounding the purchaser that relate to the possible use of the apparatus he sells. From this he plans his sales arguments. Depending upon customer policies, personnel, and traditions he selects those sales reasons that will help most to establish value in the customer's mind. The potential purchaser may be quite ignorant of the methods of obtaining further improvement, or again, well informed as to technical methods and the characteristics of suitable machinery or equipment. The detailed characteristics of

the apparatus usually are last points of consideration and are used as supporting evidence to prove the superior results to be obtained. Likewise, matters of price and other conditions of sales are, wherever possible, left in the background until values are established in the purchaser's mind.

When we consider purchases in this light, we can appreciate the importance of establishing every possible fact regarding the product sold, and the services the supplier is in a position to render, which in any way will help tip the scales in favor of the supplier. Not only does the salesman endeavor to establish as many advantages as possible, but he also tries to make each advantage real in the buyer's mind so that it will weigh heavily in the scales for him. Since the reality of these advantages depends upon the interests of the individual who weighs them, obviously the salesman must select and emphasize them with due regard to the one to whom he is selling.

Inexperienced sales engineers invariably dwell only upon selling points, which to any purchaser are fairly obvious, because such arguments require the least ability and resourcefulness on the part of the sales engineer in making a convincing presentation.

A weakness rather common among salesmen is to devote sales arguments only to the product they sell and the price applying to it, and to disregard the services the supplier can provide.

We repeatedly find salesmen entering into a long discussion of quality in design and manufacture of the product sold. Such arguments fall flat and carry no conviction whatever in the mind of the purchaser unless "quality factors" are very definitely interpreted as actual "result factors." The best way is to base the argument on the results, and refer to quality only as a reason for results.

A sales engineer representing a manufacturer of electric arc welding equipment recently closed an order for three welding equipments with a manufacturer of heavy metal-working machinery and also an annual contract for a supply of welding rods. Here are the sales arguments presented by this sales engineer.

His first effort was to point out the advantage in a redesign of several of the types and sizes of metal-working machines his

customer built, employing frames constructed by welding steel plates and shapes together, in place of iron castings. Toward this end, after collaborating with the machinery builder's designing and manufacturing engineers and others of the customer's personnel, he established the resultant benefits to be derived from the change, expressed whenever possible in dollar values, which were these:

Stronger machines, reducing the risk of breakage.

Lighter machines, reducing handling and transportation costs.

Quicker deliveries, because shapes carried in stock could be cut and fabricated rapidly.

Better appearance of machine, due to redesign and use of steel shapes.

The second effort of the sales engineer was to sell his welding equipment in preference to those of other makes. For this purpose the following points were presented:

The principle on which the arc welding machine operates was explained and compared with other principles sometimes employed, to show its superiority in producing a reliable weld.

The construction of the machine was explained and interpreted as operating efficiency, representing economy in the use of electric current and minimum maintenance expense.

The welding machine was demonstrated in service, showing its ease of operation, range in variety of work it would do, liberality of capacity, and similar advantages.

The third effort of the sales engineer was directed to establishing the reputation of the supplier: what the equipment had accomplished in the field of electric welding, and the technical services it could render in helping the machinery builder to use the welding sets effectively and in providing assistance in the event of difficulties. The sales engineer also pointed out that his organization might be helpful in saying a good word for the machinery builder's apparatus, and possibly make use of it for manufacturing purposes.

The most effective sales arguments are those that cite instances of substantial returns to other purchasers from the use of the products and services sold by the sales engineer. In selecting such references, those in which the operating conditions closely resemble those of the prospective purchaser should be chosen. Actual figures showing material savings or improvements experienced by others prove very effective offensive sales weapons. By carefully checking on the use of equipment that the sales engineer has personally sold and obtaining data upon operating economies realized, the sales engineer can develop powerful selling facts which support and strengthen every sales argument presented.

A sales engineer selling products standardized as to quality, such as alloys, chemicals, and plastics, faces a somewhat different problem from one selling machinery and equipment. Many such products are clearly defined by specification and can be furnished by a number of suppliers. So far as the merits of the particular material he sells are concerned, often nothing much can be said, aside from its uniformity in meeting a specification. His attention in selling must logically be focused upon assisting the purchaser in understanding the advantages to be gained through the use of the product, and in actually employing it in such a way as to obtain the best results. He must also establish the ability of his company to act as a reliable supplier and to furnish the product promptly and in shape to be conveniently used.

A sales engineer selling specially molded parts used extensively on machines for spinning woolen yarns knew that several of his competitors could furnish these parts made according to exactly the same specifications as to material as his own. His sales arguments relating to the material used had no particular value. Therefore, he concentrated the purchaser's attention, through the exhibition and test of samples of these molded parts, on the ability of his company to supply a very high degree of uniformity and great accuracy in physical dimensions. Having established these points, he devoted his attention to the merits of his company as a reliable and efficient source of supply. Matters of fair dealing in the replacement of any of these parts which might not exactly measure up to required physical dimensions were particularly stressed. In securing this

business, this salesman made an agreement, both with the purchaser and with his own factory headquarters, by which the purchaser set aside parts that he received which failed to pass their inspection, and, after a quantity of these had accumulated, the salesman called on the purchaser, looked over the parts claimed as defective, and determined then and there that they could be scrapped and full credit allowed. Such a scheme did away with the maintenance of detailed records and much bookkeeping expense and pleased the customer greatly.

Every experienced sales engineer is frequently faced with the problem of convincing a purchaser within the very limited time available. A complete presentation of all sales arguments under such conditions becomes impossible. Only a few outstanding facts should be selected quickly and carefully, with due consideration to the interests of the customer. It proves much more effective to present a very few outstanding advantages well than to refer rapidly to many, for then perhaps no single point registers.

Sales Procedure

In talking with thousands of technical graduates who are preparing for careers in the field of sales engineering, I have found several questions commonly asked. These are:

How can you find out whether a customer is in the market for your product?

How do you decide whom to see when visiting a customer?

How do you interest a customer in the product you are trying to sell?

How can you explain technical details to a non-technical purchaser?

How do you find out whether a customer's financial credit is good?

What can you talk about with an official who knows nothing about the sale you are trying to make?

How can a young man hope to have his story heard by an older man of experience and standing?

What if your customer has no time to see you?

What can you do if the customer says he is not interested in your product?

What if your price is high?

What if the delivery of your product takes longer than that of your competitor?

How can you correct a customer, without offending him, when he makes false statements about your company or your product?

How can you possibly obtain business from a customer who sells products extensively to your competitor and sells nothing to your company?

How can you find out what your competitor's prices are?

How can you re-establish your position with a customer who has had trouble with your apparatus?

How can you explain a delay in delivery to a customer who has become indignant?

How can you solve a technical problem in the presence of a customer, without going back to your office to figure it out without interruption?

Such questions may appear quite elementary. Yet if we watch the operations of even experienced sales engineers, it is surprising to see how many fail to fully grasp the principles that apply to sales procedure, the sales presentation, and interview. Many questions such as these indicate the importance of preparation.

The significance of proper sales procedure is emphasized by the fact that the average sales engineer spends a remarkably short period of his total working time in the presence of prospects and customers. He spends at least three quarters of his working hours within his office, or in traveling or waiting.

Since the time of contact with the prospect is so limited, it is of the greatest importance that the sales engineer prepare himself

to meet every question and be ready to eliminate every doubt that may exist in the prospect's mind. Preparation is vitally necessary, for hesitation, ignorance, and fumbling destroy the effectiveness of sales procedure. Planning not only how to proceed but also how to meet every possible question and changing condition is required.

Sales procedure is the method the sales engineer follows in the solicitation of orders. This method cannot be completely standardized, because there are so many variations in the personality, habits, and interests of the prospect. Changes and new influences are introduced. Besides, the products and services that the sales engineer sells differ. For fairly standard apparatus, sales procedure may largely consist only of a single interview or an individual sales presentation. But the sale of major equipment is usually drawn out, and sales procedure may require several calls upon the prospect, each tailored to fit in as part of a complete selling job. The job is, therefore, a series of sales interviews and sales presentations differing to a degree in character.

In this country particularly, sales technique has been developed to a high degree. Each year sees available a new crop of literature on "how to sell," much of which attempts to treat old principles in a new and catchy way. In fact, selling the principles of salesmanship, all wrapped up in an alluring package, has become something of an art in itself, and in every important trade center in this country the individual can receive instructions in popular forms of selling that may assist him. The art of high-pressure selling has been pursued so diligently that it almost seems necessary to provide training for the rank and file in the development of sales resistance calculated to achieve greater intelligence and discrimination in buying.

Since all sales engineers, to a greater or less degree, face purchasers and endeavor to gain acceptance for ideas and apparatus, an understanding on their part of the principles underlying sales technique is necessary. Of singular importance for progress is an understanding of human traits and human reactions. We shall therefore proceed to consider such practical principles and practices as will best guide the sales engineer in his daily work in dealing with the ultimate purchaser.

"Know your customer, yourself, and your product" is the trite

recommendation of a master salesman of the passing generation. Such a statement still holds true, if we distinctly understand that knowing the customer includes an understanding of his processes and problems. However, it gives us little help in grasping the best methods of procedure in selling. To be successful with any customer, sales procedure must be planned in an orderly way; yet, since sales engineering is not an exact science and conditions surrounding the customer are constantly changing, its course may have to be altered at a moment's notice.

A Pattern of Sales Procedure

Success in changing the prospect to a satisfied customer, follows a definite pattern. If any sales engineer takes time to analyze his success in such an instance, he will find he has accomplished three steps of procedure.

First, he obtained the prospect's interest.
Second, he created in the prospect's mind a desire to do business with him and his company.
Third, he fully established the confidence of the prospect.

Many ways may be used to accomplish each step. Only one step may be taken during an interview or even several interviews with a prospect new to the sales engineer.

Interest is created in the prospect's mind only by first focusing attention upon the prospect himself and those ideas that will interest him as an individual. To capture his interest, the sales engineer must be quick to evaluate the prospect's duties and responsibilities as well as his personal characteristics. Interest may be created by the novel features or design of the apparatus offered, but far more often it is created by what the equipment itself will do, or by the help the salesman's company or the salesman himself, can give.

Desire follows interest if the sales engineer can show that both his apparatus and his recommendations indicate the best solution to the prospect's problem.

Confidence, however, is permanently obtained only through satisfactory performance. Until the sales engineer receives an order and what he has sold is placed in satisfactory operation, this confidence is not complete. However, there are many ways of estab-

lishing confidence long before the order is obtained. Since most negotiations for machinery and equipment require preliminary work, there is usually ample opportunity for building up the confidence of the prospect. This may involve meeting an engagement, furnishing engineering drawings or supporting data, or quoting a delivery or price. The very manner in which the sales engineer performs and the timing of his actions to meet the prospect's desires either increases or destroys confidence. In numerous cases a salesman loses an order after he has created both interest and desire, simply because through subsequent faulty performance he fails to develop the prospect's confidence. Establishing the confidence of the prospect or customer has far-reaching results. Once established and maintained, it overshadows both interest and desire. Many purchasers are repeat buyers. With confidence established, the sales engineer need spend no time in gaining a hearing or attempting to prove his case.

If, for instance, the sales engineer promotes materials-handling equipment used in industry, his ambition should be to become an expert in this field. His aim is that the purchaser thinks first of him with complete confidence, whenever a problem arises involving moving materials about a plant or elsewhere. With complete confidence established, the salesman becomes the customer's preferred technical adviser in the solution of problems of service to be rendered by the products that the salesman can furnish. All the moves of sales procedure must be taken with this end in view, it being remembered that seeds take time to germinate and to grow to plants that bear fruits. Exaggeration, boastfulness, half-truths, incorrect or unfounded technical recommendations, "half-baked" ideas, broken promises of performance—all these disturb satisfactory relationships and *destroy* confidence, reducing the salesman and his company to the position of a second- or third-rate supplier.

Since, to the salesman, orders are simply a by-product of his performance resting upon confidence, his sales procedure follows those methods that yield the kind of service that establishes, supports, and preserves confidence.

A prominent manufacturer of large internal-combustion engines considered the wisdom of putting on each engine an auto-

matic device for recording the duration of operation for the purpose of checking lubrication and other features of service. A simple inquiry was sent to a leading manufacturer of such devices, and a salesman was immediately assigned to the prospective purchaser. This salesman visited the engine builder, furnished sample devices to test, studied the requirements of each type of engine, and through his intelligent effort and enthusiasm developed a close relationship with the purchaser and gained his confidence. As a result, this engine manufacturer not only decided to employ such a device on his engines, but in addition standardized on the make sold by this salesman. Though the selling price on each device is small, today this salesman has developed a valuable and important source of continuous business.

Where the salesman establishes the complete confidence of the customer and fully deserves and maintains it, his problems of selling are greatly simplified.

In equipping a new modern mill for rolling steel, for instance, three parties are involved: the steel-mill operators and engineers, the manufacturers of the rolling-mill machinery, and the supplier of the electrical power and control equipment necessary. We find instances where large contracts for the entire equipment for rolling steel have been awarded to a particular supplier, with the simple statement that necessary equipment will be furnished to roll certain grades of steel product for a certain cost, under stated limited conditions. Obviously, many details regarding the equipment, not established at the time the contract was awarded, were furnished to the purchaser later. The important point is that the supplier with a record of past accomplishment and fair dealing, and a thorough understanding of the particular technical problems involved, had established in the minds of the mill owners complete confidence as the result of his knowledge, interest, honesty, and ability to perform.

In practice we continually find that, with satisfactory relationships and confidence established between salesman and customer, large undertakings and commitments are based upon a verbal agreement. Though this is as it should be, the salesman loses no time in confirming the understanding in writing and reducing the

transaction to the form of a written order or signed contract, for individuals within any organization come and go, leaving verbal understandings unrecorded.

Gaining Interest and Developing Favorable Relationship

Let us consider the salesman who is "starting from scratch" with a prospective industrial purchaser who for all practical purposes is unknown to him. As we have previously pointed out in studying the individual buyer, he first rounds up all the information he can obtain about the company's business and financial structure, plant, processes, equipment, and especially the personnel. He must start somewhere in his contact with this company, for in doing so he can add to his fund of useful knowledge, but the initial move should be an intelligent one and made to count for the most. With the information gained in a brief review of the customer organization, the salesman determines as closely as he can the best way to establish an initial contact and produce tangible results. Perhaps the need for this salesman's products and services are not recognized, and this need must be established before progress can be made. Perhaps familiarity on the part of the purchaser with such products and services is lacking, and, though the need exists, some other supplier is filling it and obtaining the business. Or, again, perhaps past experiences with products and services furnished by the salesman's company have been unsatisfactory, and sales procedure must take the course of correcting false impressions or in making right what has been done wrong.

Let us compare the actual procedure of two sales engineers when given a new customer assignment.

An inexperienced salesman recently had his attention called to a prospective purchaser of factory equipment located in upper New York State. Not knowing much about this purchaser he made a visit to the plant and called upon the purchasing agent. He explained the general characteristics of the apparatus he had to offer, handed the purchasing agent a copy of descriptive literature and prices, and asked to be favored with an order as soon as possible.

About a month later he made a second call and asked the

purchasing agent why he had not received an order. Failing to get a reply that met with his satisfaction, he calmly rubbed his hands together and said, "Whose palms around here have to be greased before I can get business out of this concern?"

Salesman, products, and producer were then and there drastically outlawed, all possibility of business being destroyed. Besides misjudging his prospect entirely and even implying that graft was rife, this salesman had failed to learn the first rule of all sales engineering, that "To get, one first must give."

The other instance illustrates an opposite method of sales procedure:

A sales engineer of an eastern machine tool manufacturer building drilling and tapping machines was sent to Ohio, to be located there and represent his company as a member of the sales force of a machine tool dealer selling in the Middle West. Among the companies assigned to him to handle was a metal-working plant, with which this supplier had little previous sales contact. He gathered together from his associates, company records, and trade magazines all the information he could on this customer and decided to visit first the purchasing agent of this concern. His approach was that of an expert in drilling operations, citing what he had done for other companies in a study of their drilling operations and the resultant savings to them.

Listening to his brief story, the purchasing agent granted his request to see the factory superintendent, who at first treated him in a perfunctory manner as just another salesman and passed him on to the production equipment engineer. The sales engineer discussed problems dealing with efficient drilling methods, and soon the two were in the plant inspecting existing equipment and methods. The production engineer was impressed with the attitude, interest, and knowledge of the sales engineer, who made some helpful suggestions as to the arrangement of machines, operating speeds, and rate of feed for the different classes of material handled.

This sales engineer had decided beforehand that only two objects would be accomplished on this particular visit—namely, getting acquainted, and being of some assistance to the cus-

tomer, which would establish a degree of confidence. He accomplished the initial steps in these objectives.

Two weeks later he again called on the purchasing agent, who greeted him in a more friendly way than formerly and said, "Say, before you leave, be sure and see Johnson, our production engineer. He wants to talk with you." Going to Johnson's office the sales engineer received the greeting, "I am in a jam in Feeder Section B, with our drilling set up. Let's go down and take a look at it."

A careful inspection showed that improvement would be made by some rearrangement of drill presses and the addition of another machine. The sales engineer, taking a sheet of paper, sketched a plan for a revised layout, and the problem was worked out. A small initial order for a drill press was obtained—all through a sound plan of procedure, an appreciation of the customer's viewpoint and interests, a thorough knowledge of equipment and processes, together with a good sprinkling of tact and fellowship. Since that time this sales engineer has obtained several more orders and a good customer has been secured. His presence is welcome, and he has the complete confidence of this purchaser.

This sales engineer proceeded to develop relationships through rendering assistance. This customer developed confidence in the sales engineer as capable and trustworthy, in the product that he sold, and in the supplier he represented. All the old sales principles of attracting attention, arousing desire, and obtaining favorable action had, in this instance, been accomplished by applying the principle of interest in "profits to the customer," and demonstrating their reality.

The lack of ability on the part of the salesman to follow through on a procedure of selling equipment, where the need was fully recognized, is illustrated in the following incident:

The heating system for a large industrial warehouse having become antiquated, replacement was necessary. A low-pressure steam boiler was required, and the representatives of four boiler manufacturers estimated on the job. The purchaser's engineer cooperated with them. From various estimates submitted it was decided that a 500-horsepower boiler would suffice for all

ordinary conditions of winter weather, with the understanding that this boiler would temporarily carry an overload of 200 per cent. Operating conditions were incompletely analyzed and specifications loosely prepared. Competition was extremely keen, and three of the sales representatives, anxious to obtain the business, quoted a low price on the smallest and cheapest equipment available. The fourth salesman, upon whom we shall focus our attention, representing a very reliable supplier, finally refused to bid, hoping that in that way he would discredit his competitors and encourage the purchaser to come to him, rely upon his conservative recommendations, and place the business in his hands. He failed to make a careful study of all conditions, including such matters as these:

Temperature records of a period of years, from which it could have been established that during certain winters several days of sub-zero weather were experienced.

Possible losses due to freezing temperature existing in the warehouses, in which were stored perishable goods.

Advantage of using two smaller boilers in place of one large one, an arrangement which would give flexibility and additional protection for abnormal winter operation.

Had such an analysis been made, the risks evaluated, and possible losses dramatized, on the basis of this supplier's experience in other installations, it is quite likely that this salesman could have obtained the order. Instead, a clever salesman, selling his product largely on the basis of price, was successful. Neither the final supplier nor the purchaser should have been satisfied over the transaction.

In sales procedure, not only is it necessary for the salesman to plan his course of action but also it is particularly important that he be prepared to meet changing conditions as they arise. He must carefully study all possible events that may occur which would upset existing plans. To give some idea of the various steps that take place in a sales project of magnitude, the following illustration will be helpful:

A project to build a superhighway to include several tunnels is financed and authorized. When the project originates, an

engineering firm is retained to prepare the plans and specifications. Bids are prepared, contracts let for the highway, and subcontracts covering the drilling of the tunnels.

A manufacturer of air compressors and drilling machinery assigned a sales engineer to the job at the time the project was first considered. It became his responsibility to follow the entire project, do the necessary groundwork, reach every individual who would in any way influence the placing of business, and concentrate sales effort in the right way at the proper time with the greatest intensity possible.

This sales engineer's first step was to become thoroughly familiar with the original plans and follow every change made. He obtained a general picture of what apparatus might be required and was on the job when the first test drillings were made. The engineering firm selected to prepare final plans was located in a sales territory other than his own and served by fellow sales engineers within his company located at a distant point. He worked closely with them, making sure that they were actively cultivating the customer's engineers and supplying them with technical information on his product, its application, and the success gained through its use by others. The contracting engineers on the project, therefore, knew what this supplier recommended, when it could be obtained, what it would do, and what its initial cost and the expense of maintenance would be.

As the time came for obtaining bids, this sales engineer for the supplier saw that those contractors who prepared to bid understood fully the part that he might play in providing means of performing drilling operations in the best and most inexpensive way. With the over-all contract placed, and the subcontract for the tunnels awarded, the work narrowed down to concentrated effort upon the subcontractor. With technical assistants within his own company, the sales engineer set up a demonstration of sample equipment recommended for use on the job and proved its suitability to the contractor requiring it. Since the project was a large one, he prepared to provide local service facilities on the job to rectify promptly any troubles that might develop, and he stood ready to recommend experts to be employed by the contractor for supervising the use of his equip-

ment and operators who were experienced and efficient. Terms of payment on his apparatus were adjusted so that the contractor could pay for it in accordance with a schedule of payments received by him on his entire contract.

The movements of this sales engineer were quick and carefully timed. Through the developing of acquaintanceship and an understanding of their respective problems, he gained favorable consideration from every individual who in one way or another influenced the purchase of equipment, and, after he was successful in obtaining orders for compressors and drilling equipment, he made repeated visits to the ground where this equipment was used to see that it met the requirements of the contractors.

Dealing intelligently with the various personalities in a customer's organization comes largely from experience, but certain general suggestions will help the sales engineer. It is one matter to determine the assigned responsibilities of various persons, and another to evaluate their individual influence in placing business. Often it will be found that a person in a responsible position depends upon some individual in an obscure or perhaps minor position for advice on certain matters. Reaching him with reference to a particular sales program that interests the sales engineer often becomes of great importance, as was true in the following instance:

One sales engineer endeavoring to sell coal-washing equipment to a mining company worked closely with the chief engineer and superintendent. On further investigation he found that a mine foreman employed by the company had at one time been employed by a manufacturer of mining machinery and was very well versed in the construction and use of machinery of the type sold by the sales engineer. Whenever the matter of new equipment of this nature was under consideration, the chief engineer and superintendent depended largely upon the judgment and recommendations of this foreman in the selection of equipment.

The salesman, therefore, must know those who really influence the decisions that are made, and also the actual responsibilities exercised by those who carry the titles. Often, particularly in

small companies, the title of the individual may fail to express his responsibilities. For instance, the secretary of a company may have other responsibilities than those ordinarily attached to such a title, or the factory manager may exercise authority and influence far beyond those one might assume to be his.

Many sales engineers representing well-managed companies overlook the possibilities of interesting purchasers in their own company, and thereby furthering confidence. The sales engineer who informs himself about the policies and programs of his own company in its various spheres of activity will find much that he can use in gaining the interest of his customers.

Every successful company has something of interest, and business men are always attracted by policies, practices, and plans that contain new ideas, or ideas that have worked out satisfactorily. Business men like to know how other companies operate successfully. The sales engineer who is alert to every opportunity stresses some things his company is doing and capitalizes them in helping to establish its reputation in the mind of the purchaser.

Most companies today, for instance, are interested in employee relationships. Many new ideas are being carried out, and few companies are unresponsive to items of interest in this connection. If the salesman represents a company that is progressive in matters of this kind, it will pay him to be familiar with such matters and prepared to talk intelligently about them.

One salesman employed by a company that has an established profit-sharing plan for its employees has been diligent in finding out exactly the basis upon which it operates. He finds many executives connected with his customers interested in the plan and is able to describe it to them, thus enlisting their interest and respect for the company he represents.

Another salesman for a large company building machinery learned that one of his prospect's executives was interested in adopting a plan for rewarding employees for valuable suggestions. Knowing that his own company had a well-developed suggestion plan, this salesman obtained from his home office a complete outline of it, together with copies of forms in use and the method of administration. Furnishing these to his prospect was a valuable good-will gesture.

One of the sales arguments sometimes overlooked is the service the supplier performs to the community or political units in which he is located. A salesman representing a firm building equipment used in construction work made a strong plea as a supplier to state officials in connection with apparatus to be bought, because his company supported many employees and paid heavy taxes to the state. This salesman armed himself with accurate data on these points and thus established himself in a preferred position.

Nothing pleases a customer more than to know that the sales engineer has him in mind in connection with anything of real interest or help. Newspaper clippings of interest, technical articles, sources of technical information, active prospects for the purchase of products, the location of suppliers of special and uncommon articles desired by the customer—such items of information as these reflect the real interest a salesman has in his client.

The managements of most successful companies are no longer satisfied with their operating methods and are continually on the lookout for improvement in their ways of doing things. As we have seen, whereas a few years ago the volume of business done was pointed to with pride, today profits are looked upon generally as the measure of success as well as employee satisfaction and welfare. It is natural then, that an opportunity to reduce operating costs and improve operating conditions, no matter by what means, interests purchasers. The salesman working for a progressive and successful company has many opportunities of passing on to his customers helpful suggestions and information.

Not long ago a salesman selling a large variety of metal-alloy products found a customer very much interested in improving his own methods of establishing purchasing specifications and inspecting and testing what was bought. This salesman, knowing that his own company had given this matter very close attention, took the time to explain to the purchaser how his company established buying specifications and tested what was bought. This sales engineer supplemented his knowledge with exact information obtained from his headquarters. In supplying this, he was of real service to the purchaser, and he himself benefited in the sale of his products.

The superintendent of a factory upon whom a salesman called, in another instance, had trouble in establishing an adequate and simple system for following productive work in his plant. The sales engineer posted himself fully on such methods used in his own factory, where conditions were quite similar, and was able to render real assistance to the purchaser by supplying an outline of the system employed, together with route slips, order forms, and other records.

Finally, every sales engineer encounters competitive activities at every turn. The manner in which he deals *with competition* often strengthens or weakens his position. Hard hitting and ethical competition helps trade and also helps the salesman himself. The salesman should never berate competitors; rather, he should ignore them until a direct issue arises concerning the competitor's product, policies, or performance. He studies the competitor's apparatus and methods, and, knowing his competitor's weak and strong points, he directs his own sales arguments to meet them effectively and to prove superiority in results to the purchaser. A deliberate effort to knock and discredit competitors always reacts unfavorably to the sales engineer.

The Sales Interview

The merchandise salesman usually aims to win an order in one interview. The sales engineer seldom accomplishes his end so quickly. A succession of interviews, frequently with a number of different individuals connected or associated with the buyer's organization, are usually required.

Much as the sales engineer may desire to obtain business promptly during the initial interview, in the large majority of instances this is impossible. The services and products that the

sales engineer can furnish usually require a substantial investment. Decisions are made carefully, often after several alternate methods of procedure have been considered. Many points of advantage and disadvantage must be considered. Detailed objections are raised, and these must be met. Often the interview is entirely successful if only one step is taken in the direction of finally getting the order. But, when a negotiation has reached the stage at which the purchaser can act, concentration upon closing the order is vitally important.

A call upon a customer may be for a wide variety of reasons—for instance, to obtain technical information upon which to base a proposal, to submit an engineering plan or layout, to straighten out an incorrect invoice, to convey a revised delivery schedule on orders placed, or to conclude a prospective sale. No matter what the immediate purpose of the visit may be, it always presents an opportunity of developing closer relationships and establishing further confidence.

In visiting important customers for a definite purpose, if this purpose for some reason cannot be fulfilled, the salesman is prone to let matters rest and go on his way instead of making the visit useful in some other direction. The easiest path for the salesman to follow is to see only those individuals in a customer's organization with whom he is acquainted. These should not be neglected, but the cultivation of new friends is essential to progress.

Every call should be made to count the most, because the proportion of any sales engineer's time in actual customer contact is all too small.

The Interview Should Be Planned

Every sales interview should be planned. Some successful sales engineers jot down on paper a summary of the points to present. More often in traveling to the prospect's office or plant, there is ample opportunity to form a clear mental picture of the plan to be followed. This time can be used to refresh the memory on names, faces, and what has gone before, as well as to develop new and appropriate sales arguments. Repeatedly salesmen fail to grasp all the opportunities an interview offers, simply because their minds are confused with extraneous thoughts

and they fail to concentrate upon prospect and problem until the start of the interview.

Many a sales plan must be changed, however, as the interview progresses, simply because conditions change, as well as the prospect's reactions. Failure may come from the inability of the sales engineer to sense a new situation and adjust his procedure to meet a variety of altered circumstances.

Any plan for a sales interview should be only a typical guide. Rehearsed presentations usually have a deadly effect on the prospect.

The Initial Interview

Selecting the time for an interview and making an appointment, usually by telephone, are important, for time is conserved and due consideration can be expected by the sales engineer. Usually the prospect selects the time for an interview. When the sales engineer can set the hour, it is well to bear in mind that the busy man in an office likes time in the morning to clear his desk of urgent incoming mail before granting an interview. After lunch is also often a good time to call on a prospect for then his mind may be relaxed and his mood more friendly.

Letters of introduction or telephone messages from business friends of the individual to be visited, particularly if they refer to the service that the salesman has rendered the writer of the letter, will be found useful in preparing for the initial visit by the salesman.

As the salesman gets to know the individual he calls upon, he soon finds out his business habits and on what days and at what time during the day he has more leisure to give the salesman his undivided attention.

A few winters ago a salesman handling cement machinery planned a call upon a vice president of a large cement company, whom he had not previously met. The object was to meet this official, to explain the interest of himself and his company in a proposed extension to the plant, to demonstrate his ability as a supplier of equipment, and also to determine whether the project had received official authorization. He called at the official's office, and with a few friendly words with the latter's

secretary discovered that this official had just arrived in a fit of anger. His car had been stuck in the snow for an hour, and help was finally necessary in getting to the office. The salesman made no attempt to see him then but asked for an appointment during the afternoon, which was granted. The opening conversation dealt with the snowstorm, and the salesman called the official's attention to a new set of patented chains he had bought for his car. This paved the way, and a pleasant and profitable interview ensued.

The first step in any initial interview is the most difficult. The inexperienced salesman naturally wonders how best to "break the ice," and "what to talk about" may appear a nightmare to some. With most busy people, any extensive salutation or set opening speech is purposeless and usually proves detrimental. Opening remarks should invariably be directed to the interests of the person the salesman calls upon or his company, and not upon the salesman himself or his product. In visiting customers in detached communities, particularly in some parts of the South and West, a different situation may exist. Inaugural courtesies and genial conversation on subjects not relating to buisness may be quite in order, as business is based to a greater extent on social intercourse. Purchasers who are remotely located are often glad to spend time with sales engineers in chatting on a variety of subjects, and they look forward to the salesman's visit as a pleasurable event.

Some years ago, the Boston sales office of a large company obtained from its headquarters a young factory-trained college graduate with the intention of developing him into a sales engineer. After he had learned the office routine and was beginning to answer a few inquiries from customers a purchaser requested that a representative call upon him. It so happened that this particular purchaser was known to several of the regular sales engineers as a difficult person with a wild temper, who was in the habit of berating not only the sales engineers who had previously called on him but also the supplier. In fact, this purchaser's name had become a byword, and none of the sales engineers would have anything to do with him. When this request came to the office, it was turned over to this junior sales engineer as a practical joke.

This young man was red-headed and the hard-hitting sort; he took the assignment in earnest without knowing the circumstances. He walked over to the purchaser's quarters and met the individual who made the inquiry. No time was lost in berating both the young sales engineer and his company. As the words became more vindictive and abusive, the young man's temper rose until the color of his face matched that of his hair. He could stand it no longer, and turned to leave. As he passed through the entrance, he noticed a bottle of ink standing on a small desk. Withdrawing the cork, he threw the bottle with all his might at the potential customer. He ran down the stairs, returned to headquarters, and sat down at his desk to cool off and wait for things to happen. His fellow sales engineers twitted him, asking to see the order he had obtained, but his mouth was sealed. The next few days were, for him, ones of keen apprehension, but as they passed, one by one, and still nothing happened, the matter finally dropped from his mind.

Several months later, the manager of the office in which this young man was employed received a call from this same official of the purchasing company. "Please send around the young man who threw the inkwell at me, as I have something that will interest him," came the request. The manager investigated and identified the young man, and the call was made. He was well received. He obtained an order—and from the first customer he ever called upon!

This true incident, though most unusual, illustrates an extreme in personalities sometimes encountered, and also a method of approach which, however, cannot often be successfully followed!

After an interchange of pleasantries, ordinarily the thing to do is to get down to business. After the introduction, the paths of procedure will depend both upon the position and individual interests of those being visited and upon the position of the sales engineer with the purchaser, whether he is an "outsider trying to get in" or a regular supplier. There is, however, a distinct advantage in the initial interview in directing the conversation to some general topic of interest to the customer, such as conditions of the industry of which his company forms a part or that of his own business. This serves as an opportunity for developing an ac-

quaintanceship, perhaps furnishes interesting information upon the individual and the customer, and gives the sales engineer a chance to establish his qualifications.

Long visits or interviews often become tiresome to the purchaser, and he does not retain all the points which the sales engineer attempts to establish. Other advantages can well be reserved for subsequent visits. Thus the sales engineer, following a plan of establishing thoroughly one or two advantages at a time, builds a selling structure which will support him when the time comes for orders to be placed. We see from this why each sales interview should be studied in advance and planned for, just as one would do if he were preparing to dictate an important letter or build a garage. For each visit the salesman determines what the particular interests of the listener are and what the particular conviction is that he will attempt to establish in the listener's mind at that time.

One problem confronting every salesman in time is the extent to which he should approach the executive head of a large purchasing company, without offending those lower down with whom he has frequent dealings. As a rule it is highly important for the sales engineer to meet top executives, at least at infrequent intervals. He may ask those lower down in the customer's organization to introduce him to such men, or make an appointment with the executive directly or through his secretary.

If the salesman is to visit a high official of the company, and he has already evaluated the risk that such a visit may offend those lower down with whom he has frequent dealings, he should line up in his own mind the ideas he is anxious to present. The interview should be brief and deal with the broader aspects of company relationships rather than technical details. If the sales engineer is obtaining business from the concern, or if he has obtained an important order, such a visit gives him an opportunity to thank the executive for favorable consideration. Many top executives will ask the salesman if there is anything further that can be done for him, and the salesman should be quick with a request that the executive interest himself in this or that, perhaps introduce the salesman to some individual in the organization whom he has not met or to some acquaintance of the executive in other purchasing companies. Many young sales representa-

tives hesitate to meet men in high positions, yet it is ordinarily true that the man of great responsibility is surprisingly approachable, simple and direct in his dealings. Often older men look back to the time when they were struggling to get along, and they have an appreciation of the younger man's problems and an admiration for his earnest endeavors, or are attracted by his youthful enthusiasm.

Suggestions That May Help the Interviewer

One important point to remember is adjusting one's approach and appeal to the position and interests of the prospect. It is a great mistake to "talk down" to a person holding an inferior position. It is well to listen carefully to a prospect who is a technical expert. Avoid brash statements in a field unfamiliar to the sales engineer, but lead him to a decision by selecting and emphasizing those points that he makes that can be made to weigh heavily in the sales engineer's favor. In every instance the message of the sales engineer must be tailored to fit the person he interviews.

Information of interest to the prospect is the best foundation for any interview. The salesman who is well informed and can select and impart the information that interests the prospect is forever welcome. With a keen eye and a broad contact with a variety of customers, he can accumulate a storehouse of useful facts that he can pass on to others. There can be no limit to his helpfulness, provided that he does not pass on information that has been given him in confidence. One successful salesman is of repeated help to shop superintendents and shop foremen by making suggestions. He is careful to let them get full credit for such ideas and thus gain recognition from their superiors.

If the visit is with operating men in plant, mine, or on construction job, the salesman's whole attack should be of a practical nature. The more he becomes a part of the operating group and establishes himself as one of them, the better off he is. Borrowing a pair of overalls and adjusting a machine, or helping measure space limitations for new equipment, may fall in line with his duties and make impossible the criticism that he is a "silk-gloved sissy" who never gets his hands dirty.

Things were not going just right with a large power shovel bought by a western contractor. The sales engineer who sold it came out on the job. He looked over the machine and the conditions of operation. Then he asked the superintendent for a pair of overalls. He jumped into the cab and started the machine, operated it for a while, made some minor adjustments, tried it several times, and finally left the installation in first-class running shape, and everyone was happy. While this was going on he got acquainted with the shovel operator, showed him some important points to look out for in operating and maintaining the machine, and built up his pride and confidence. Other things being equal, who would obtain the order for another shovel, if needed?

The length of the sales interview should be gauged carefully by the interest and attention of the listener. If other business interests exert pressure on him, and he is unwilling to set them aside, it is much better to arrange for another appointment when he will be free than to attempt to speak with him while he is preoccupied. However, the sales engineer who allows himself to be continually put off will make no headway.

Imagine yourself sitting at a desk when a business visitor, unknown to you, is ushered in. From the moment you see him, impressions are created in your mind, and by the time he leaves you there has been registered on your memory a composite opinion based upon a group of impressions. His appearance and his manner have had their effect upon you; if you have seen him for only a short time these may constitute the sole impression you have. Each impression darts into your consciousness and registers according to your likes and dislikes, your reasoning and prejudices.

The contact is much like bringing together two irregular surfaces which are fairly plastic. One may be harder and more forceful than the other, and each has projections which, at first, fail to fit into existing depressions. The results of shape, material, and the force or pressure at once become evident. Each, however, is subject to alteration as contact exists, and with contact comes change, so that a reasonable fit is usually possible.

The objective of the visitor is, of course, to create those impressions that find acceptance to the listener, and, at the same time, accomplish a specific purpose.

One can develop a style of speaking, just as in writing. Style does not relate to ideas conveyed, but rather to the manner in which they are presented. It is the dress in which the ideas appear, and a clear-cut and convincing conception may be created, or a hazy, meaningless impression, depending upon how the ideas are tailored for presentation. Excellent ideas may be wasted by a weak and impoverished style, whereas second-grade ideas may be made forceful and may carry weight as the result of a strong and individualistic style. In selling in the field of engineering products, simplicity and directness appeal most, because the sales engineer deals with practical problems and practical men. Remember the final effectiveness of Lincoln's Gettysburg speech.

If each of us could see a motion picture of ourselves interviewing one of our customers, we should undoubtedly find a number of weaknesses that need correcting in the ideas we present and in our manner or style of conversation. Most of us fail to talk clearly, so that sometimes we may not be readily understood by the listener. Much of our conversation is poorly timed and punctuated, failing to give the necessary emphasis so that each point is clearly understood and its value fully appreciated. Our voices are likely to become harsh and strained, or, at other times, our remarks become almost inaudible and fail to carry the idea, thus causing strain to those who must listen. Too frequently our eyes wander over the objects in the room, and our conversation lacks direction and gives the impression of a recitation. Look the man you are talking to straight in the eye, and be quick to learn from his face whether your story is being clearly understood, and to gauge the nature and strength of the reaction. Keep the body erect, at ease, and don't distract the listener's attention—as well as your own—by nervously fiddling with pencils, papers, face, or any other object. Maintain a pleasant manner, for you yourself must anticipate a pleasant reaction. It is useless to build a sales interview on other than *genuine enthusiasm* regarding the message you attempt to convey, and, though enthusiasm can be developed, unless the fundamental interest exists, you are clearly in the wrong occupation.

Books on public speaking will show you, as a speaker, how to *appear animated,* but the sales engineer can depend upon the fact that the large majority of individuals whom he meets in business

can detect the difference between assumed animation and that which is the result of vital interest and enthusiasm. Practice, then, to show your interest and enthusiasm through direct and forceful expression, in simple and accurate statements.

"I always remember faces but seldom remember names" is a much-repeated statement, and yet the sales engineer seldom hesitates when it comes to technical names applying to apparatus and technical processes. Remembering names as well as faces is so valuable to the sales engineer that men make a living training salesmen in the art of remembering. The reason the sales engineer remembers technical terminology is that he visualizes the thing itself or the principle in practice. A definite association exists in the mind. The secret of all memory training is forming an association with something that is realistic, and nailing the name down to some associated thought which makes it impressive and real.

Every one of us is consciously or unconsciously pleased to be immediately identified by name, particularly by one we see infrequently. The sales engineer who walks into the offices of a customer and can call the doorman or receptionist by name goes far toward establishing his own welcome, and this welcome develops as he proceeds in greeting others by their names. Cultivate name memory, and make it one of those subconscious habits that yield returns. Repeat the name of the individual you are talking to with reasonable frequency. This pleases him and helps register his name in your mind.

One successful sales engineer told me that, while driving out to see a customer, he always makes a mental picture of the people he expects to see, their names, their responsibilities, and their interests, and endeavors to get a new answer to the question "How can I interest and serve this individual better?"

Just as any completed design depends upon ideas as well as materials and workmanship, so a sales presentation of any sort depends upon ideas as well as the technique of communication. Endeavor to present new ideas which will click with the mind and interests of the listener, be he designing engineer, plant engineer, purchasing agent, shop foreman, construction superintendent, or field service manager. Implant in the minds of all such men

called upon some constructive suggestion, for nothing will make the sales engineer more welcome or better remembered.

What so many sales engineers lack is a *background* upon which to base an interesting and constructive exchange of ideas. This background is obtained only by an accumulation of observed facts and authoritative opinions. Background can be built up by continually reading sound current literature upon technical trends, and observations supporting them constitute the most interesting topics of conversation. The opinions of best-informed people are always in demand, provided that they are well supported by fact and reason, even though the conclusion is distinctly at variance with ideas held by the listener. The statement of different opinions may stimulate and interest, whereas the restatement of trite conclusions leaves one flat and weary.

Background material may be found also in the individual and the company, if the sales engineer finds out about the prospect and the institution before making his initial call. "I have been very much interested," says the sales engineer to the cement manufacturer, "in learning of the progress you are making with your 'X' brand quick-setting cement. I see they are using it on that new section of route 35." Again, the approach is from the customer's viewpoint.

Though initiative on the part of the sales engineer in introducing new ideas gives character to any sales interview, his efforts should *lead up to something that should be done.* It may be gaining permission from the purchaser to submit sample equipment and test it, to approve a proposed engineering layout for a new crane to be purchased, the acceptance of performance specifications of a machine, the placing of an order for apparatus, or it may concern any one of a thousand decisions to be made by the purchaser that interests the sales engineer.

In a sales interview dealing with technical problems and processes, one common fault of the sales engineer is to talk in technical terms that are unfamiliar to the listener. No one likes to have his lack of knowledge or understanding exposed, and no ideas will carry conviction unless they are clearly understood. To the purchaser unfamiliar with technical matters, the experienced sales engineer uses *homely illustrations,* which bring complicated engineering principles or performance down to a commonplace level.

In using electric power for industrial service, the question of "power factor" existing in an electrical system becomes an important problem in economical operation. Should low power factor exist in the system, a considerable share of the investment is non-productive, and, owing to the nature of a particular electrical installation, the public utility supplying the power may penalize the purchaser on account of its low power factor. An understanding of the power-factor characteristics is quite complicated. One sales engineer who sells power-factor corrective equipment to industrial and commercial users of electric power explains the situation in this homely way. "Let us consider your entire electrical system as a glass of beer. It can carry so much electricity, just as a glass can hold so much beer. If the power factor of your system is perfect, or 100 per cent, then it is like the glass filled with beer without any foam. If it is 50 per cent, it corresponds to a glass containing one-half beer and one-half foam. What I propose to furnish and install on your system is some simple and cheaply maintained equipment which will bring its power factor from 50 to 100 per cent, so that, with no further change, you can get the equivalent of a full glass of beer in place of half beer and half foam."

Quiet operation is becoming more important in the use of all equipment where motion or vibration is involved. The research laboratory, in studying problems of noise, has developed equipment for measuring noise at a given point, and decibel meters are now available and often used to measure the sound created by apparatus when in service. One sales engineer explains this to his customers in the following manner: "Undue noise in your assembly room destroys the efficiency of your working force. The equipment we propose to furnish is particularly quiet in operation. In fact we test out each machine in a noiseproof room, and employ a noise 'thermometer.' If the noise 'temperature' of any machine rises beyond a certain point, it is rejected and readjusted or rebuilt until it passes this test without question. Our maximum permissible noise 'temperature' in this laboratory is so low that it does not exceed that created by the heart beat of the average individual a few feet away."

One successful sales engineer, in preparing for an interview at which specific information is to be given a customer and important sales arguments are to be presented, writes a brief letter to the individual he is to see, outlining the high points he intends to cover. This letter he takes with him, and in concluding his visit he presents it to the individual, leaving it with him as a reminder and confirmation of the story told. The mere preparation of such a brief outline serves the sales engineer in establishing in his mind before the sales interview what is to be covered and a logical sequence in the presentation of ideas. Often pertinent engineering sketches and descriptive literature are attached to the letter.

Sales Strategy

The development of *strategy* in selling comes from experience. It helps any one of us to review past selling procedure from a critical viewpoint after both successful and unsuccessful negotiations. Many a salesman who prides himself on his crafty and sagacious skill in sales maneuvering is often set down a peg or two by the opponent whose methods are simple, frank, and straightforward. Nevertheless, negotiating business successfully often taxes the ingenuity of the sales engineer to determine what general course to take and how to react at the moment. Such comments as these, applying to strategy, may help the inexperienced sales engineer:

Naturally the seller tries to create in the mind of the buyer a well-founded obligation, upon which the seller can request special consideration for his proposal.

The seller tries to get the purchaser to expose his objections and reasons for resistance, for in so doing the seller's path of argument and action can more clearly be defined and directed.

Identifying and preparing to meet the purchaser's objections becomes second nature to the seller, and in time he develops an intuition which guides him under changing circumstances.

The seller endeavors always to keep himself under perfect control, even under the most exasperating circumstances. Knowing the habits of the purchaser, however, he may in rare in-

stances choose to precipitate a heated discussion, knowing that a dispute, if happily concluded, will clear the atmosphere and lead to an understanding which will finally establish more intimate and friendly relations. There are some who enjoy an argument and opposition in order to reach the bedrock of facts. This may be their peculiar way of reaching an objective.

The seller, too, will often set up objections himself, simply to have the opportunity of knocking them down, or leading the purchaser into a position of admitting that which he otherwise would not.

Most purchasers dislike to be placed in the position in which the stand they have taken is shown to be untenable, and the skilled salesman is always watchful in establishing the fact that after all there are many apparently reasonable causes that would lead anyone to such wrong conclusions.

Although success comes to the seller through the keenest interest in the negotiations, he may, at times, assume the position of disinterest; for instance, he may, by assumed indifference, intimate that his services and products are so far above the general level of quality that this subject need not even be discussed.

As much as the seller may avoid the matter of price, and leave this factor whenever possible only for final consideration, sales argument revolves often on this one tangible matter of consideration. Few purchasers deliberately misrepresent actual facts. But by the expression of "half-truths" and through suggestion and intimation, they often may try to mislead the seller.

The seller usually "jockeys for position" where he is competing with others, always trying to have the "last chance" in connection with any pending negotiation. In doing so he considers that by that time his competitors will have exposed all their plans and sales arguments, and, with these in the open, his course will be easier.

Some purchasers, perhaps without adequate foundation, have become greatly disturbed over past difficulties experienced with the supplier and become irate and virulent. The seller usually finds it best to wait until the storm has subsided and

the expression of feeling has been given full vent before he attempts a rebuttal. Often the individual who loses his temper in a fit of rage goes too far, and ends in a weakened position. He is then in such a frame of mind that he can discuss matters in a more reasonable way and accept a sound interpretation of the difficulty.

Many a successful sales engineer leaves a heated blast from the prospect hanging in the air and proceeds to discuss another subject. Then later he makes sure to return to it and deal with it seriously. In the meantime, he has thought over the best method of rebuttal and has also given the buyer an opportunity to adjust his mind to other factors of importance besides the one upon which he became so thoroughly exercised.

The use of strategy in selling may be further illustrated by these examples.

One very successful sales engineer selling mining equipment necessarily calls upon customers in isolated locations. Competitive sales engineers rarely call, and so they often arrive with definite plans for leaving at a certain time. This sales engineer, recognizing that his prospect cannot be hurried and appreciates friendly contact, assumes a most leisurely attitude. He is ready to sit down and talk on a large variety of unrelated subjects, and even go fishing with his prospect. He spends time which to many might appear wasted. But his time is "wasted" with the direct purpose of forming so close a relationship that placing the order he seeks is almost an incident in connection with his visit.

A sales engineer for control valves and industrial instruments, calling upon a particular chief engineer of an industrial plant, must know that this man always enjoys a hot argument. Often he shapes his remarks to precipitate an angry discussion, because he knows that when the controversy is over the prospect becomes unusually chummy. Of course, the sales engineer usually guides his attack so that this chief engineer will win his point.

Years ago two opposing salesmen selling power house equipment were stopping at a small hotel in a remote western town.

One of them knew that the other was well acquainted with the public stenographer at this hotel and dictated many letters to her. As the time approached to put in the final quotation, this salesman rushed into the stenographer's office and dictated his quotation to her. Knowing his competitor's acquaintance with this girl, he used a higher price than he intended to quote and returning to his room tore up the letter. The opposing salesman in this way got a false tip from the girl which caused him to lose the order.

A foundry equipment sales engineer had worked hard and long upon a sizable order for machinery. Finally he was told by the prospect's purchasing agent that the order would be awarded to a competitor. Since the order was not actually placed, he focused his attention upon introducing some change into the prospect's engineering specifications. He found a means of improving the proposed casting process. Working first with the foundry superintendent and then the equipment engineers, he forced a revision in the specifications which required new bids from each equipment builder. He finally obtained the order due to this strategic move at the last moment.

The *interrupted interview* may seriously handicap the salesman, unless he knows exactly how to meet such a situation. Let us consider an experienced salesman in the presence of a purchasing agent. The salesman's mind is concentrated upon the sales arguments he presents and the reaction that these have upon the purchasing agent. Suppose that the telephone rings, or an assistant asks a question, or the purchasing agent is called from his office. Naturally the conversation ceases, and the attention of the purchasing agent is immediately distracted. With the interruption concluded, his mind is inclined to dwell on that which distracted his attention. When the conversation is resumed the salesman, with his "route map" of procedure clearly in mind, retraces his last step. He repeats those remarks made immediately prior to the interruption, so as to make sure that the mind of the listener is again on the right track. Often such interruptions serve as an opportunity for summarizing what has already been said, and they should be seized as an opportunity for further explanation. However, when interruptions occur so frequently as to block reason-

able progress, the salesman can well call attention to the value of the prospect's time and the pressure of important work confronting him. He then asks for an appointment in the immediate future at a time when the purchaser will be entirely free for discussion.

Ingenuity may often be necessary to see that the *path for the selling message does not get blocked.* Most persons holding the position of a buyer have an endless number of callers, from those selling typewriter ribbons to insurance. Many of them establish the rule that all suppliers must first report to them before seeing others within the organization. This may tend to block the sales engineer in his attempt to contact engineer, factory people, or others.

There are several ways in which the salesman of technical products can get past the buyer whose main interest is of a commercial nature. A highly technical question may be asked the buyer and he is forced to call in the engineers, or refer the salesman to them. The request may be to check some technical point on the factory layout or on an installed machine, and this may let the salesman pass on to the operating force.

Again the sales engineer may have received a request for information from others in the customer plant, and he is allowed to see them as the request cannot be answered by a simple statement. Few purchasing agents will hold up the sales engineer in seeing others within the plant, as long as he knows that the sales engineer can be of real help. In many cases where he has come to know the sales engineer and has confidence in him, he gives him free rein to see whom he wants.

A wise sales engineer in interviewing customers becomes *a good listener and poor interrupter.* Men engaged in industry are a busy lot, and working hours are counted by minutes. The sales engineer gets to the point of his visit promptly, but not with a breathless abruptness, for if he has a sound message it deserves a careful hearing. As he proceeds, he will feel his way, judging the interest and ease of the listener, always leading to some definite focus which calls for the listener's reaction.

The sales engineer must be a good listener, for unless the prospect is throwing up a smoke screen of words, what is said will inform and guide the salesman. Listening, in itself, is an evidence

of interest. Most sales engineers are inclined to talk too much rather than too little, and the poor fellow who convinces the prospect and then proceeds, by continuing to talk, to "unconvince" him, is to be pitied. When conversation ceases to carry ideas of value, it runs the danger of becoming destructive. As one official put it, in referring to a salesman who called on him, "His mind went away, but it left his mouth talking."

It is particularly wise for the salesman to be an attentive listener when the purchaser complains of past unfortunate experiences, usually regarding equipment furnished or performance in filling orders. The psychological effect of a chance to explain one's troubles in detail to a serious listener brings a degree of satisfaction, much the same as that of the woman who tells others of her recent operation. Sometimes, as we have seen, the purchaser carries his point too far, thus working himself into a state of over enthusiasm and weakening his position by overstating his difficulties. Pressure is relieved through the "safety valve" however. When the purchaser has had his full say his mental attitude is much more favorable toward letting the matter drop or arriving at a reasonable settlement.

Arguments, as such, have little place in the sales interview. Many sales engineers have won an argument and lost an order. Naturally the one doing the buying bases his opinion on what he knows and his personal viewpoint. If the sales engineer is convinced that the buyer is wrong in some important statement, in correcting him the sales engineer is quick to explain how such a wrong impression might easily exist. Nobody cares to have his assertions proved wrong without having some logical "face-saving reason" to justify his original position.

Positive and far-reaching statements made at the start place the sales engineer in the position where he must prove his case. He sets up for himself a distant and, perhaps in the eyes of the purchaser, a questionable mark of achievement. Though the supporting evidence may be convincing to him, it may not be so to the purchaser. "The dust-collecting system I am offering for your foundry is the best obtainable," says the sales engineer. The purchaser doubts this, and the sales engineer has a big job to prove the statement he has made. Making the approach from the purchaser's side and establishing his interests first strengthens the

position of the sales engineer. "You are after an inexpensive and reliable method of keeping the dust content in your foundry within safe limits, and I want to show you why the equipment and layout I recommend will meet your conditions in a superior way," says the wise sales engineer in his approach. If the existing requirements are not fully understood, this enables the sales engineer to understand them correctly. Such an approach, elaborating upon what the purchaser wants and must have, shows the purchaser that the sales engineer's viewpoint is that of the purchaser, thereby increasing confidence.

In some interviews with customers it is necessary for the sales engineer to take with him *technical experts,* usually to discuss a particular product sold or its technical application.

Let us assume that the sales engineer representing a manufacturer of gas-fired heat-treating furnaces has in hand a negotiation for a large furnace with a manufacturer of rock drills. Large quantities of drill points are required, and in the process of manufacture these must be heated to an exact temperature prior to hardening by a quenching process. Several technical points have come up involving the adequate heat control of the furnace, and the sales engineer has asked the furnace-designing engineer from his company headquarters to meet with the manufacturing engineer of the customer to discuss the matter. Before the sales interview, the sales engineer is careful to acquaint the visiting furnace designer with the details of the problem involved, the particular points in question, and the sales plan he has in mind. Furthermore, knowing the customer's personnel, he has sketched to the furnace designer the responsibilities, interests, and peculiarities of the customer's manufacturing engineer, and also of the works manager and purchasing agent, either one of whom may be called into the conference.

In such an interview the sales engineer takes the lead, briefly presenting the responsibility, experience, and accomplishments of the furnace designer. The sales engineer takes pride in his own ability to call a foremost designer of furnaces from his work at headquarters and obtain his undivided attention, and he therefore builds up in the customer's mind an appreciation for the expert advice available. The furnace designer, with no

great experience in negotiating business, may naturally be reluctant to act as other than a consultant, and the position of the sales engineer is that of leading and guiding the sales presentation and technical discussion, bringing the furnace engineer into the picture and giving him free and uninterrupted opportunity for expressing technical recommendations and meeting technical objections. At no time does the sales engineer lose control or leadership of the sales presentation, and when discussion tends to become sidetracked on technical matters that are not pertinent he redirects the trend of procedure, making sure that every point raised by the purchaser is covered to his complete satisfaction.

The point of this illustration is that the sales engineer, while preserving his position of leadership in the particular negotiation, builds up the importance of the engineer who accompanies him, and also the importance of every aspect of the negotiation in the supplier's mind.

The simplest things are sometimes those that we forget to emphasize. So many sales engineers do good groundwork in selling and give the customer information and service just as desired, but fail to drive home the anxiety they have to obtain the order and the interest they have in getting an opportunity to demonstrate performance.

A young sales engineer was reporting the loss of an order to his superior. He apparently had done the many things necessary to deserve the business. "Did you really ask for the business?" asked the sales manager. No, this point had not been stressed, but "of course the customer understood it."

Probably the most difficult purchaser is the one who agrees with everything you say but does nothing about it. He is the flower of inconsistency, but that does not help the sales engineer, unless he can get the purchaser to admit it and act favorably. If repeated effort and sound reasoning get nowhere, the sales engineer is in an excellent position to go to officials higher up in the purchasing company with a true story of approval by his friend who agrees with him but will not act.

Relating hard-luck stories and appealing for business on the basis of sympathy for the difficulties surrounding the sales engineer are usually valueless in building customer relationships and confidence. Here and there, where a complete selling job has been done, and the sales engineer is short of a business quota set by his superiors, this or similar circumstances may well be mentioned as an added reason of the salesman's anxiety to obtain the order, when he is dealing intimately with friendly purchasers.

A very common weakness in any sales interview is due to the inability of the sales engineer to "button up all the loose ends." It is well to close the interview with a very brief summary of the conclusions reached and the next steps to be taken.

From this discussion it will be observed that the successful sales engineer cannot have only a single-track mind. His work, particularly applying to the sales interview, requires a breadth of view, an abundance of information, and an ability to alter his course according to customer reaction. In short, the successful interview calls for a high degree of resourcefulness.

The Buyer Looks at the Seller

It is helpful to listen to those experienced in buying investment items, such as machinery and equipment. These men are usually interested in new apparatus for expansion or improved productive facilities. Or perhaps they must relieve a critical situation where a breakdown has occurred.

Sometimes buyers face the question of whether to continue to purchase a certain product they use regularly, or whether to buy the necessary equipment and make it themselves.

Statements such as these have been repeatedly made by those experienced in dealing with sales engineers:

> We like the sales engineer who takes an interest in our problem, patiently gets all the facts, and then gives his recommendations in clean-cut complete terms that fit the case. If by experience we find we can rely upon him, he becomes an ally in the process of buying.

> Some sales engineers lose interest in our problem after we have given them an equipment order. What interests us most is that what we buy will work just as well as the sales engineer has said it will. Some men with whom we have placed orders must be continually checked to see that they live up to their promises. They don't often get repeat orders from us.

Before we decided to make certain screw-machine parts, rather than continue to make them we called in several machine tool sales engineers for advice and recommendations. One who represented a leading manufacturer of screw machines gave us a proposal particularly complete. He guaranteed the cost of the parts, based upon our quantities, man-hour costs and overhead. His interest and thoroughness won for him the order.

Too many of the sales engineers who call on me try to bluff their way through, and press me for an order. It would be a relief to hear them say they don't know but will find out.

Some sales engineers call too frequently, others are forgotten or only come on call. I don't mind being asked by the sales engineer how frequently he should call. I can help him save his time as well as my own.

New ideas are what we want. Too many sales engineers simply call to see if I am not in the market for one of their machines. Who knows—perhaps the sales engineer's own suggestion may be the spark that starts the need and creates the order.

We like the man who doesn't gossip. Several stunts we pull off in our plant are the results of keen thinking and hard work. Much we do we are glad to talk about, but certain operations are confidential. We don't do business twice with the man who can't keep his mouth shut when he should.

Statements such as these show both the strength and the weakness of the sales engineer. One important, experienced official, who is responsible for buying machinery for a large company, estimated that 20 per cent of the sales engineers calling on him perform no service whatever and are unacceptable; another 20 per cent responded with reasonable efficiency to the inquiry handed them; and the remaining 60 per cent are really creative and reliable sales engineers whose services are more than welcome.

Tools Used in Selling

Resourcefulness counts enormously in selling. Every skilled sales engineer has a complete "kit of selling tools," and is ready to use the right one at a given opportunity. Some of these tools are ideas, others are physical aids.

Literature

In the sales interview, and in carrying out a sales program with a prospect or customer, the sales engineer can effectively use:

Descriptive literature of a promotional value.
Engineering data providing technical information on the product and its use.
Photographs illustrating the equipment and installations.
Copies of informative advertising.
Reprints of technical articles.
Instruction leaflets and books.

The preparation of such material is commonly a job for the home office of the manufacturer. Since the sales engineer is in constant touch with purchasers, he can furnish valuable information for its preparation. He certainly has a right to demand suitable selling tools of this character.

The most common fault of sales engineers is to depend too much on literature to do the selling job. He is often inclined to pass out literature and depend on the prospect's reading it. Being familiar with it himself, the sales engineer frequently fails to identify and introduce it properly, and then take plenty of time to go through it step by step with the prospect. He can well afford to cite examples of information sought by the prospect, and then show how this information can be quickly obtained from the printed technical literature.

SAMPLES

It would be fine if the sales engineer could pack the machine or equipment in the back of his car, carry it into the purchasing engineer's office, and demonstrate it. Usually this is impossible. But almost every machine has some critical parts that can be taken along to illustrate the quality of design and workmanship applying to the machine as a whole. Frequently, too, as with a machine tool, samples can be carried to show what the tool will do.

"Seeing is believing," and samples can be used as supporting evidence to show results that will be obtained. They must be carefully selected and properly displayed. Presenting them properly requires a certain technique.

Too often the sales engineer carrying the unwrapped sample drops it unheralded on the prospect's desk. It should be neatly wrapped. It should be introduced enthusiastically, and at the right moment, after the prospect is interested, it should be displayed. Each advantage should be dramatized, and the dollar and cents results established.

When the demonstration is complete, the sample should be wrapped up and set away so that it does not distract the continuing interview. Perhaps the prospect asks to keep it. He may say that he wants to show it to others in his organization. The alert sales engineer asks for a chance to do this himself and in this way extend his selling effort. It is wise to mark the package with proper identification.

Models accurate to scale find an increasing value in selling. They should be light in weight and well finished. The various elements of the machine may be of different colors to aid in demonstration. Models are particularly useful in selling to production and shop people and layout men, who are planning a new assembly of machinery.

Models of larger equipment can be made so that the parts can be disconnected or reassembled in the presence of the prospect.

One of the best ways to sell machinery and equipment to the prospect is to take him to another plant where the equipment is operating successfully. Proper arrangements for the visit are necessary. Make certain that the apparatus is working successfully and the user is enthusiastic over the results obtained. The

salesman can take an active part in the demonstration and can also make use of the visit to further his sales contact with those in charge of the installation.

Advertising

High-grade advertising is informative and convincing. It helps to establish the character of the machinery and equipment sold, by interpreting the policies, position, and services of the supplier. It shows what the apparatus will do and supports these results by demonstrating its distinct advantages. It helps to mold opinion and focus choice. It is one of the most important selling tools.

The common forms of advertising of most interest to the sales engineer are page advertising in trade and technical journals and direct mail advertising.

Only an occasional salesman can write good advertising copy. But every salesman can contribute ideas to the development of good advertising copy. Who can be in a better position to cite reasons for customers' preference, or supply interesting case histories of results obtained from its use?

Specifically, the sales engineer can furnish the prospect with sample advertising sheets. Often these are in serial form, presenting one feature at a time. He can instigate a direct mail program directed to a group of persons in a given prospect's organization. He can spot individuals who have doubts or objections and direct to them sales promotional material intended to correct these and especially focused to change or strengthen opinion.

In one of the smaller eastern states some serious consideration was being given by the state legislature to lighting state highways as an aid to the reduction of accidents. A sales engineer supplying street-lighting equipment had, over a period of years, collected some very valuable information on the relation between the quality and extent of highway lighting and the frequency of accidents. He prepared an illustrative circular on this, which he sent with a letter to each member of the state legislature, offering to furnish additional data and his services to congressmen to help them in an intelligent study of the subject.

One most important opportunity for the sales engineer who represents an established supplier is that of furnishing his headquarters with a list of the correct names, titles, and addresses of individuals in a purchasing organization, so that these individuals can receive literature and other messages regarding the supplier's products and services. With some indication after each name as to the responsibilities and interests of the person, it then becomes easy to select such publications as will interest the particular individual rather than burdening him with a variety of material.

Letters and Quotations

Each letter to the prospect, each quotation, each proposal, is a selling tool. They may either vitiate sales effort or add to it. Every written communication to a purchaser can be so formed as to build up confidence. Some sales engineers do an admirable job through personal customer contact but fail in following through with equally high-class typewritten communications, which in themselves can help to do a complete selling job. Remember that such communications usually pass from one to another within the purchasing organization and sometimes are the only contact between the sales engineer and an individual.

The elements of a good letter or quotation are these:

Logical arrangement.
Brevity—make every word count.
Clarity.
Completeness.
Attractive appearance.
Personal touch.

Where the letter is addressed to an individual well known to the sales engineer, it is usually wise to frame it on a personal basis aimed at his particular interests.

These principles hold true in connection with the formal proposal and contract referred to later.

Recently a purchasing engineer threw a letter across his desk to me with this remark, "Who would ever want to do business with that fellow? He doesn't even know how to write a letter." This letter of quotation was poorly arranged and typed. Thoughts

were not presented in a logical order. Twice the number of words was used necessary to express the thoughts conveyed. Precious time on the part of the reader was wasted.

In every quotation on apparatus these matters are essential:

Clear and brief definition, by established style or catalog number, or by specification, of what is to be furnished.
How and when delivery is to be made, or service completed.
The degree of responsibility the supplier assumes in connection with related products or services.
The price, and point of sale applying thereto, with discounts, if any, applying to the particular purchaser.
The terms of payment.

Personnel outside the Customer Organization

Other interests or persons may be valuable selling tools. Most local banks make a business of knowing who's who and what goes on in the industrial world about them. Like the live sales engineer, many are alert to investment opportunities relating to plant extension and rehabilitation.

Consulting and contracting engineers employed by the purchaser can supply the sales engineer with helpful information. Also those who handle the advertising account of a prospect can often make valuable suggestions.

Other non-competitive sales engineers who sell the prospect can invariably be of assistance, because they have learned their customer organization.

Important stockholders in the smaller companies, when a friendship is formed, often prove to be a valuable source of information.

Every sales engineer should view his prospect from the angle of those in the locality who are most likely to know what goes on within the walls of the prospect's plant. In this way his avenues of knowledge can be multiplied.

Selling Your Own Company

Many sales engineers forget to sell the company they represent—the facilities of the organization, its record of performance,

and all the services it can render. For the sales engineer employed directly by a manufacturer, this selling job can be easily focused, but the sales engineer who represents a distributor or manufacturer's agent must sell the company he works for and also the manufacturer of the particular equipment he sells. Such sales features too have definite value.

Group Selling Technique

The practice of selling a group of individuals may be an effective sales tool. Selling several individuals in the prospect's organization at one time can be accomplished by a prearranged meeting. In this way the sales engineer can gain the undivided attention of several persons. Questions can be asked and problems thrashed out. Most prospects can be sold on this idea since it provides better-informed personnel.

Such a meeting must be carefully planned. Don't ask for too long a meeting—it will extend itself if it proves worth while. Be sure and request the presence of all persons who may be interested. Plan a logical and interesting program and presentation. Employ all appropriate sales tools. Provide opportunity for discussion, and draw out expression from those attending.

The sales engineer must be well prepared. Questions of a broad policy nature may be asked, or those that are highly technical. It is usually desirable for the sales engineer to select the services of technical men within his own organization so that no questions asked will go unanswered.

The sales engineer should confidently take the lead, and, with a definite program, hold to it and button up each point at a time.

A meeting at the supplier's plant may be also desirable—one where key men in the customer's organization are invited to the sales engineer's headquarters. Appropriate entertainment goes a

long way to help in establishing good will and gaining more intimate acquaintanceship.

No sales engineer should overlook the selling opportunity of any celebration, such as those relating to the opening of a plant or the starting of an important installation where his apparatus is involved.

A Team Captain

As in football, every successful sales engineer is at least to some degree a good team captain. He plans the attack and calls the signals. No good captain attempts to complete the play single-handed.

Persons within his own organization or on the outside may be members of his team. All of them may be called upon to perform some particular act at a specified time. The captain is quick to recognize the individual ability of each and the kind of help they should give. He is ready to applaud what they do.

Repeatedly we find in industry older sales engineers who have met with only mediocre success, because they draw a circle about their prospect and erect the sign "keep out." They are usually skilled individualists—prima donnas. Greater results might invariably have come through the help of others and through corresponding help to them.

Meeting Obstacles

Engineers should be the most imaginative class of persons that exist. They have to see things in the mind before they are fully created. Anticipation is essential to the successful sales engineer, because he must place himself in the position of his customer and establish in his own mind what the customer's line of reasoning may be and what he may want to know. Objections, unanticipated, are hurdles in the sales engineer's path. If he dodges the issue or tries to bluff his way through, his position is severely weakened. Met promptly and convincingly, these objections disappear; but, allowed to stand, they grow in size and importance. "I try to think of all the possible objections to my proposition," said one successful sales engineer, "and then I develop facts and ways to overcome them that convince me so strongly that I have the confidence to convince others."

Skilled sales engineers welcome sincere and clearly stated objections, because they show interest on the part of the purchaser, reveal his opinions, and indicate where to strike. In fact, as we have seen, the stratagem of setting up objections in order to knock them down in a convincing way may be employed; in this way the prospect is disarmed.

In order that the sales engineer can plan intelligently to meet objections, let us consider in what general categories such objections fall.

The Need: "I don't need air-conditioning equipment in my office, an automatic screw machine in my plant, a portable welder in my roundhouse, or a freight elevator in my warehouse," says the business executive. On economic considerations, this executive may need such equipment but is not conscious of the fact. The sales engineer's study of operations and processes with the customer's personnel enables him to establish the need the existence of which has been unrecognized.

Recommendation and Product: "Your line-up does not look good to us," says the factory manager, "and we are afraid of trouble with the bearings of your machine." Here the objection is focused on the product and a particular technical point.

Relations to the Supplier: There may be objections to doing business with the company that the sales engineer represents because the customer lacks knowledge of the company and its ability to perform, or because of unsatisfactory past performance. If the supplier organization is a large one and furnishes a wide variety of products used in many industries, the purchaser may desire to deal with a small supplier specializing on one product, or again, the purchaser may consider the specialist too small to deal with. The purchaser may claim that the supplier now receives his full share of the purchaser's business.

Conditions of Sale: Price, delivery, terms, or other such commercial stipulations in the sales engineer's proposal may, in the opinion of the purchaser, be non-competitive and unsatisfactory. Competition may occasionally come from suppliers who offer used or second-hand equipment.

Satisfaction with Present Supplier: The purchaser may express complete satisfaction with the products and services furnished at present by another supplier.

Standardized on Other Makes of Apparatus: The expense to the customer of a change to the supplier's products may be a definite objection, where the customer's methods of purchase and use have become well established.

Reciprocity May Govern Purchases: Trade obligations, or "You scratch my back and I will scratch yours," often have a direct bearing on buying and selling—a condition which purchasers are often not anxious to admit but are nevertheless real. Reciprocal purchasing comes forcibly to the front during periods of depressed business. Pressure to keep a plant going forces its sales management to employ extraordinary means in making sales. If other factors are equal, it is quite natural for the purchaser to place business with those companies where close business ties have been created through selling.

Personal Preference: "I prefer to do all my business with Mike Murphy," says the purchasing agent. "He fits in well with our crowd, and we trust him." This objection may be based on

prejudice, but more often on friendship and attention on the part of the individual sales engineer.

In considering how best to meet these various objections, we can well repeat with emphasis the fact that values are created in the mind. Two purchasers may hold diametrically opposed opinions regarding a product or a service. Both opinions may be based on facts, experience, and impressions. The facts may be incomplete and the evaluations improperly proportioned. Impressions, gained usually by word of mouth, may be misleading.

Running down the objections requires a keen power of analysis to find what is back of an objection and whether it is sincere. The purchaser may intimate to the sales engineer that his apparatus is not favored by the operating people, and upon checking up with these operating men the sales engineer may find this not so. The real objection may be a reciprocal situation in which the sales engineer's competitor buys heavily from the purchaser—a matter which the purchasing agent feels awkward in mentioning. Camouflaging the issue often occurs with no desire to deceive, but rather to discourage and get rid of the sales engineer who must, necessarily, take the time and attention of the purchaser when the value of his services and products is unrecognized.

It is obvious that the sales engineer cannot possibly approach success unless he is able to dig deeply into the minds of those he meets and through skill and intuition finds out what real objections exist. To do this, he becomes an expert in establishing sources of information and diplomatically using that information after he gets it.

In order to see more clearly those methods that may be used by sales engineering in meeting such objections as these, let us consider the most important ones in some detail.

Often the sales engineer is obtaining valuable business from a customer, and, as he extends his efforts to obtain a greater share, the purchaser objects on the basis that he already is receiving his full *share of the business placed.* To such an objection as this, the sales engineer endeavors to establish the unreasonableness of apportioning business on any other basis than services rendered in the form of results obtained. He then establishes what his company and he himself are doing by reason of which they deserve a greater share of the business. Such factors may include

research, efforts toward improved design, sales and maintenance service—in fact all the "plus things" that his company is doing.

When the *purchaser is not interested* (assuming, of course, that he has need for the product and services that the sales engineer can furnish) the sales engineer can do well to agree with him. Why should he be interested if he is not familiar with all that the sales engineer can offer and supply? The sales engineer, too, may admit only a casual interest in the *product* he sells, but a keen and vital interest in what the *use* of this product will do in saving and making money for the purchaser. Or the sales engineer may well point out that Mr. Johnson, of the Continental Company, who is known to the purchaser, was also uninterested until he saw the value in the results of the products and services of the sales engineer, and then took advantage of them to his benefit.

Every purchaser is interested in decreasing losses and increasing profits, and this objection can best be met by the principle of selling—not apparatus, but results. No intelligent purchaser can possibly maintain that he is not interested in savings of some sort.

The sales engineer representing a company that makes a variety of products often encounters the purchaser who expresses a preference for *dealing with a company that specializes* only in the product under consideration. Met with such an objection, the skilled sales engineer first establishes the fact that his company is a specialist in the particular product. Then he adds that, since his company builds a wider variety of allied products, its entire activities over a period of time are more stable in character as the result of such diversity, and, when business is poor in the particular line of equipment under consideration, the sale of other products will support continued development and improvement, whereas the specialist may be severely handicapped in doing so. In addition to this, he says that the mere fact that his company does furnish a wider variety of products, many of which are used with each other to perfect a complete installation, enables it to develop and furnish products related to each other and entirely suited for operating together. Since he has more than one product to sell, his interest in satisfying a customer upon one product is stimulated by a desire to sell other products also.

On the other hand, the sales engineer representing a company building only one class of product emphasizes that attainment

can best come from undivided interest and concentration and that specialization has been responsible for progress in modern times. Many small companies specializing in a particular product have contributed liberally to the advancement of design and manufacture.

Such a situation can be well illustrated by the contestants for an order for a stoker used in a power house. One sales engineer represents a company building only stokers; the other sales engineer's company builds a complete line of power-house equipment, including boilers, condensers, and other steam equipment.

In meeting the objection that the "*purchaser is entirely satisfied,*" we have previously pointed out the necessity for the sales engineer to prove this statement through contact with those who, in any way, are involved with the product purchased. What is the measure or standard of satisfaction? It is always comparative, and, unless the purchaser has some comparison, he can never judge correctly and get full advantage of his purchase. Troubles or inadequacies are often hidden until complete failure occurs.

The sales engineer may well base his argument on the fact that no purchaser can afford to be satisfied, for if he is, stagnation results and finally failure.

"In our operations," says the purchaser, "we have decided to *standardize* on Metropolitan equipment. It completely satisfies us and we save by uniformity for we have to carry only small stocks of replacement parts, and our men are very familiar with Metropolitan equipment."

The sales engineer for a competitor of "Metropolitan" cannot break down such arguments in a word or two. But, if he does not know all conditions involved, he should find them out. What breakage occurs, and what volume and type of repair parts are needed? This may point to a weakness in Metropolitan machines. What features appeal to the operating men, and is not the sales engineer's machinery better suited to the service? Having retained this business so long, has not the Metropolitan concern become satisfied, and consequently complacent? How about the comparative output and efficiency of the sales engineer's apparatus against Metropolitan's? By completely exploring all the factors of

the situation, the sales engineer can piece together arguments that will support the fundamental arguments in favor of any company's having at least two sources of supply for important purchases.

Repeatedly every sales engineer encounters *competitive deliveries* which are shorter than his company can make. Many purchasers delay a decision to proceed with a project and purchase, but, when once they have decided, they demand prompt action, and quick delivery and installation become vital factors in determining the make of equipment bought. Any argument supporting longer deliveries must be based upon dependability of the supplier to meet such deliveries, and the additional value to be obtained through the use of the supplier's equipment and services, in relation to competition.

A sales engineer representing a manufacturer of cement-making machinery has collaborated with the purchaser's engineers who are laying out a new cement mill. Decision has been made to proceed with the mill, and, in order to meet an early peak demand for cement, the time for completion of the new mill becomes a very important factor. A competing concern agrees to deliver the machinery in three months' time from the date the order is placed, but the best delivery this sales engineer can promise is four months. The purchaser establishes certain profits which he will have to forego through the delay. These the sales engineer questions, on the ground that his company has established an enviable reputation in connection with previous commitments, and a similar reputation has not been established with this particular company by his competitor. In addition to this, the sales engineer can cite several other installations of similar equipment where his company has finally completed delivery ahead of the promised date. The sales engineer's chief arguments are based upon the fact that, after the installation has been made, savings through the quality of equipment and excellence in engineering layout will, within a relatively short time, compensate the customer for any losses due to delay in operation and that it is one thing to obtain delivery and another thing to have the mill start off promptly, without lengthy delays in changes and adjustments. Prompt service in

times of trouble may add further to the sales arguments, enabling the sales engineer to obtain the order against shorter promised delivery on the competitor's part.

The objection of *lower competitive prices* is usually the one that the sales engineer has to encounter most often. Why is price so often uppermost? Price is evident and easily understood. Price is the "handle" so easy to grasp in dealing with any proposition. It is the popular common denominator. Value is not evident, or not completely so, and is often difficult to establish. With the products sold by the sales engineer, the results of value have to be established in many ways, and they are influenced by personal experience and interpretive opinion. Value not only relates to the product and its use, but also to service characteristic of the supplier. "Price" can be dumped on the scales in a flash, but it takes time and effort to gather all the items that will outweigh it. When the sales engineer is confronted by lower prices of competitors, his problem is to establish value, or the results from an investment measured by price.

Low prices, when offered by a sales engineer, provide an "easy way out" in obtaining business by avoiding some of the thought and work necessary to establish the idea of value in a customer's mind. Any sales engineer can negotiate the exchange of high value for low price, for this can be done with little skill or effort. When such a purchase is made, on a basis of price, those who buy are inclined to establish a lower level of regard for the product, for the sales engineer, and for the service he can render. Future sales at higher prices are increasingly difficult. Any argument of value falls short where the sales engineer offers materially lower prices than competitors, and there remains little than can be told that rings true, for, under ordinary circumstances, the purchaser knows that no such thing exists as maintaining a permanent advantage except by skill and effort.

If lower competitive prices are quoted on a group of items, the obvious initial step is to check the number, type and grade, or capacity of each item offered. This is particularly true where the bidders offer an assembly of equipment to comply with a specification. Sometimes it will be found that the lower bidder has omitted some necessary item. He may have done so intentionally,

hoping, that after the job is awarded to him, he will have a chance to plead successfully for extra payment.

A *reciprocal situation* based on one company buying and selling to another company may be either an obstacle to the sales engineer or a point in his favor.

Let us consider a sales engineer who represents a conveyor manufacturer and is trying to sell his equipment to a company that regularly sells a large volume of steel to one of his competitors. Naturally our sales engineer's competitor has an easier path in selling such a prospect since friendly commercial relationships exist. The prospect desires to retain the good will and business of the competitive conveyor manufacturer.

The sales engineer encountering such an adverse situation must first concentrate his effort on those men in the prospect's organization who are to use the conveying equipment. Usually they are the operating men responsible for production, together with those engineers assigned to the job of selecting equipment that will best satisfy these shop men, who operate and maintain the conveyor. They must be so thoroughly sold on the advantages of the conveyor our sales engineer offers that they will specify it outright. These operating men, however, will doubtless be opposed by executives higher up in the steel manufacturer's organization who know the value to their company of the volume of steel business obtained from the competitive conveyor manufacturer. These officials will urge the operating men to consider and even favor the competitive conveyor manufacturer.

Hence, as well as selling the steel company's operating men to the extent that they desire his conveyor above all others, our sales engineer must help them fight their battle. He must assist them in demonstrating to their superiors that they cannot be responsible for the best results from production unless our sales engineer's conveyor is furnished.

An equipment manufacturer was about to purchase apparatus required for production, and proposals were obtained from several manufacturers. A complete review was made by production officials of the merits of each proposal, based upon the apparatus itself, its suitability to produce the results required, the ability of the supplier to perform in every way required, together

with the selling price. This revealed one supplier's proposal to be of outstanding merit. At this point the sales department of this concern stepped in and insisted that the purchase be made from one of the other suppliers who had bid on the job. The equipment officials took the following stand. "We in the manufacturing branch of our company are held responsible for the quality of the products we make and performance in production. If we fail to perform, we handicap our sales organization. The matter of selecting suitable manufacturing equipment must be left in our hands, for the best interests of our company as a whole." This position was supported by the top management of the company. The sales department was so advised, with the understanding that the reason for the decision in favor of the particular bidder be made plain to all bidders.

In another instance, it so happened that two suppliers presented proposals in which little difference existed as to merit in the eyes of the works equipment officials; this time the management ruled that it would be to the best interests of the company to place the business with the one of the two suppliers that had given the greatest consideration to the purchase of goods made by the company.

Sales representatives, in their efforts to sell to companies whose products are extensively bought by the seller, are very likely to take it for granted that they *should* have the business anyway—a quite vulnerable attitude, and one that may be capitalized by competitors. Correspondingly, the fact that one's competitor purchases heavily from those to whom one endeavors to sell may place a false obstacle in the path of the sales engineer.

Some companies to whom the salesman endeavors to sell will confront the salesman with a list of figures indicating what each has bought from the other over a period of years. A "trade balance" is thus set up. Such figures are often misleading, unless serious consideration is given to the buying power of one company for the products made by the other company.

Reciprocity is a "two-edged sword," for, if applied to the ultimate limit, it injures both buyer and seller and destroys the

basic principle supporting healthy industrial progress, i.e., trade that rests upon the merit of goods and services.

Purchasers are reluctant to admit that orders are placed with those who buy heavily from them, or at least for that reason. The efforts of the sales engineer can best be directed toward employing every possible resource at his command to gain an acknowledgment from the purchaser of superiority of the salesman's offerings. This leaves the purchaser in a difficult position to place business for reasons of reciprocity alone.

In one instance a sales engineer trying to sell pumps to a large foundry knew that his prospect sold castings to his competitor. He found that no one in his prospect's organization would admit that this relationship had anything to do with the favorable consideration being given to his competitor's bid. The purchasing agent for the foundry in no instance would refer to this relationship but, nevertheless, gave this sales engineer little consideration.

Finally the sales engineer decided to take the initiative and made a statement such as this to the purchasing agent: "Of course, no progressive company lets reciprocal relations govern its buying. If companies did, they could not be sure that they were consistently getting the best equipment and supplies for their needs under the most favorable circumstances. Without competition in buying they would be likely to fail sooner or later. Good competition must receive some reward, otherwise it soon fails to exist." The purchasing agent replied after a pause, "You are right. Of course, to buy wisely we must have competition. We can't in the last analysis let reciprocity govern our purchases."

In this way the pump sales engineer gained an open admission that reciprocity should not be the governing factor, and, with this point brought to the surface, together with a first-class selling job, he was able to obtain the pump order rather than the competitor who was in a favorable reciprocal position.

The customer may say that he *cannot afford the expense* involved in the purchase. The answer to this objection must be based on fact, not fancy. It will be based upon parallel compari-

sons, with instances cited in which others have invested in this way and obtained advantages. The answer may come from a closer study of the purchasing company's available funds and budget plans, for the purpose of pointing out that in this investment funds can be put to better advantage than by investing them in other channels. The partial-payment plan of sale, in some instances, may be applicable where savings are consistent. Such service, if not furnished by the supplier, is available through banks or financing companies.

A sales engineer representing a company that manufactures packaging and baling machinery called upon a manufacturer of chemical products. Much of the raw material supply for the company came packed in heavy pasteboard cartons or wrapping paper. Such packing material had been given away to a junk man who called every few days for it. When the sales engineer suggested the purchase of a baling machine which would simplify disposal of this waste material, the company dismissed the matter as an investment that they could not afford to make. However, when the sales engineer found a steady market for the waste material when properly baled and established the fact that the machine he recommended would be paid for within a year from this new source of income, the company's officials quickly decided that they could afford the investment.

Competition sometimes arises with those who offer low-priced, *second-hand* or *rebuilt* machinery and equipment. Sometimes such apparatus is not repaired or rebuilt by a reliable concern and carries no guarantee, or one of questionable value. Defects may appear later and cause failure involving expenses and loss even exceeding the price differential between the new and the used machine. The new apparatus may have advantages in design over the old one. The job of the salesman selling new machinery and equipment is to establish comparative values that transcend advantages in price and availability.

Selling Each Product

Many machinery manufacturers build a variety of allied products. In this way they have expanded by reaching a wider market. Selling expense should be lower where the sales engineer can offer more than one item to the individuals and companies he contacts.

However, the salesman, whether he is employed by the machinery builder or by a distributor, often fails to exert the necessary effort to sell *each* line of product. A salesman may devote his principal attention to one product simply because he knows most about it and gets the most pleasure and satisfaction from selling it.

A sales engineer for an electrical manufacturer had an active negotiation for motors and control with a chemical equipment manufacturer. He visited the prospective purchaser fully equipped to capture the order, which was finally obtained. Pleased with the results, he returned to his office.

The purchaser, however, had a poorly lighted drafting room. He also built sheet steel containers which were fabricated with rivets. Both these departments in the customer's plants presented an opportunity for selling—one for industrial lighting apparatus, the other for electrical welding equipment. Both were neglected, and time and opportunity lost.

Unequal selling effort applying to a group of products is usually a cause for wasted time and effort. With so small a proportion of the salesman's time spent in the presence of the potential purchaser, it is obvious that his efficiency is reduced when he devotes most of his selling time to only one product. There may be a variety of customer personnel to reach, but reaching them in one visit saves time.

A young sales engineer representing a supplier of pumping apparatus was analyzing the requirements of a large machine which was being designed to treat and mix chemicals. Several pumps were required upon each machine, and the sales engineer was successful in getting this manufacturer to standardize on his make of pump and to order it regularly. The pump builder, however, also furnished a line of fabric belts and pulleys, both of which items were required in the construction and operation of the machine quite independently of the pumps. The sales engineer completely forgot to attempt to sell these items; later, when he saw one of the machines in operation in a chemical plant, he discovered the opportunity he had lost.

In addition to selling every item that is necessary that the sales engineer can furnish, often the salesman finds that the purchaser has made no provision to buy items that must be purchased from others. An opportunity then exists for the sales engineer to recommend the products of other suppliers. In so doing he assists the purchaser and gives a business tip to a friendly supplier who at some time can perform a similar favor for the sales engineer. Sales engineers representing different non-competitive suppliers and reaching the same group of customers have many reasons to benefit from a close contact with each other.

Losing Business

A good sales engineer is a hard but gracious loser. He is tenacious to the end. When the order is finally lost he shows his graciousness by thanking the purchaser for the consideration he received. But nonetheless he registers his disappointment, points out that he has helped the purchaser buy advantageously for which he deserves definite consideration on future negotiations.

So far, I have never seen a lost business report prepared by a sales engineer that stated that the order was lost because a good enough selling job was not done. It never pays to brood over the lost order. But it always pays to review the work done, spot every weakness within the sales engineer's control, and set about applying what has been learned.

In analyzing a lost order the salesman can usually find some opportunity missed or some tool neglected. Some influential individual has not been contacted. At some point in the negotiation he may have made a false move. Before banishing the loss of the business from his mind, he can fortify himself for the future.

The loss of an order can be used as a steppingstone, not only to improve sales skill but also in connection with the individual purchaser from whom the order was lost. Often the sales engineer has contributed to a successful purchase. Having performed a service, he deserves future serious consideration.

The commonest causes for failure, usually attributable to the sales engineer himself, are these:

A late start.
Lack of groundwork during the early stages of the negotiation, particularly the development of a sales plan.
Failure to reach all persons who have influenced the purchase.
Lack of sufficient knowledge of the customer and his problems.
Lack of knowledge of the apparatus offered.

Past difficulties with products sold which have not been taken seriously and corrected.

Lack of knowledge of competitor's apparatus and his methods of selling.

Failure to contribute ideas and to render required engineering service to the customer—usually due to inaccuracy and incompleteness, or lack of initiative.

Poorly planned sales strategy; lack of patience, diplomacy, or self-control.

A weak and unconvincing sales presentation, lacking in logic and detail, which did not convey anxiety to serve the customer.

Failure to employ every sales tool.

Failure to furnish a well-written proposal which covers every detail in concise and impressive form.

The effort and sales expense incurred in losing an order upon which a real struggle has been made are just about as great as in obtaining one. No second or third prizes are awarded in the race, except where the purchases are split between bidders. The only advantages gained are an improved relationship with the customer brought about by introducing strong competition, the building up of future obligation, and the fact that the loss of the business serves as an opportunity for the sales engineer to uncover his own weakness. He should think of the "plus things" that could have been done and use them in the future.

Some sales engineers, in losing important orders, have weakened their future positions seriously by complaining of unfair treatment and lack of consideration. Rather than follow such tactics, they should create an obligation on the part of the purchaser to give them preferred consideration in the future. It never pays to knock a competitor.

Occasionally the sales strategist, where a number of purchases are to be made in succession, deliberately formulates his attack in such a way as to preserve his position, yet lose a particular order, with the intention of being in a better position to obtain a larger or more profitable one to be placed in the early future. The wisdom of such sales procedure is usually questionable, however, and in general it pays to put up the best possible fight on

every negotiation that comes up, for the plans for the next purchase may be delayed or abandoned.

It is always wise to follow up the performance of a competitor in completing an order, and to find out exactly how the installed apparatus performs. Perhaps the purchaser has reason to be disappointed with his purchase. Sometimes those who actually made the decision and placed the order are reticent to admit that their choice was unwise. But, through intimate contact with those men who operate the equipment, the sales engineer can find real weaknesses that cause dissatisfaction. Thus the salesman can arm himself and know better how to direct his selling effort in the future. He is justified in capitalizing all shortcomings in the manner in which the competitor has met his commitments. Failing to do so he is not doing a selling job for the future.

Customers' Complaints on Equipment Sold

No matter how well the product is designed, made, and applied the sales engineer selling it will at some time encounter complaints. Trouble may be imaginary or due to the purchaser's unfamiliarity with equipment and standards of performance. Some features of performance, though entirely normal, may cause concern in the purchaser's mind. In selling to customers who are unfamiliar with the use of the product, the sales engineer can usually avoid such complaints by a careful explanation of what the customer can expect and what characteristics of operation should be regarded as danger signals. Customers differ greatly in their attitudes toward troubles of this nature: one fails to investigate but rather cries for help; another uses his ingenuity in in-

vestigation and appeals to the supplier for help only as a last resort.

It is interesting, in observing the methods pursued in selling common products or services, to see how the average plumber fails to seize sales opportunities presented to him. In the case of most householders requiring his services, he is actually invited into the home, in answer to a call for help. Almost invariably, when he has corrected the particular failure he picks up his tools and departs. No effort is usually made to suggest the benefit to the householder of a careful inspection of the plumbing installation throughout, to detect other weaknesses, correct them in advance, and thereby avoid serious inconvenience and expense. Such common practice in this particular trade will illustrate to the sales engineer, by contrast, the possibilities that may exist when help is needed by his customers. The average complaint should be regarded as a sales opportunity.

In the modern plant, production proceeds through a succession of regulated steps. Much of the machinery and equipment are links in a chain. The failure of one may mean a stoppage of all. Furthermore, each machine may depend on the proper functioning of individual elements such as motors, control, pumps, or blowers. It is not hard to visualize the extraordinary loss that may occur from failure at one single point. An appreciation of this and corresponding action on the part of the sales engineer are of outstanding importance.

In correcting trouble promptly and effectively, the sales engineer can demonstrate his keen interest in the customer and his ability to serve him when help is most needed. Dodging trouble when it is real can do more than anything else to destroy confidence. Under such circumstances the purchaser is commonly upset, the difficulty is inclined to be magnified, and the appearance of disinterest and inactivity may register on his mind with an indelible impression. Getting on the job personally, determining what should be done promptly, and getting it done with emergency dispatch are the essentials to follow. More friends and better friends are made through trouble than in almost any other way. The plant manager is always approachable if you hold an answer to his troubles. The barometer of customer confidence

becomes immediately sensitive in time of trouble; its favorable reading depends upon prompt and satisfying performance. Upon an exhibition of interest and good performance, it will rise to a higher level, and when all is over the plant manager will say to himself, "That man is really interested in me, and I will work with him more closely in the future. Whenever I get in trouble, I know where to go for help."

The director of works equipment of a large metal working manufacturer was severely criticized because he had continually specified one make of machine tool for a large share of his requirements. Higher officials suspected that undue favoritism was shown this supplier.

When this director was asked for an explanation, he was able to show how the sales engineer representing the machine tool builder had repeatedly saved his company thousands of dollars simply by following up complaints and correcting the sources of trouble far better than any of his competitors. Praise took the place of criticism.

An emergency of some sort is one of the most powerful forces to get people acquainted. Most of us can recall how some critical event has made a slight acquaintance into a fast friend. It is the same way with customer personnel—acting promptly and effectively may do more to establish friendship and a sense of obligation than many a skilled sales presentation.

In the strain of getting trouble rectified, for instance with apparatus, often little consideration is given to the responsibility for the expense involved. It is wise, before repairs or replacements are made, to reach an understanding with the purchaser as to who is to bear the expense, provided that such action creates no hindrance in proceeding to correct the difficulty. Nothing should interfere, however, with following the quickest course of action that will enable the purchaser to continue his normal conditions of operation.

In the case of trouble, some purchasers take the stand that the supplier of apparatus should assume expenses that are due to the failure of the apparatus itself. No supplier is ordinarily willing to assume such expenses, and the responsibility of the supplier

usually extends only to correcting by repair or replacement that which is found to be defective. Furthermore such responsibility, which usually forms a part of the supplier's guarantee, exists for only a limited period from the time the apparatus is shipped to the purchaser. When the purchaser suggests that the supplier bear consequential damages, the sales engineer can usually convince the purchaser that his position is unreasonable by referring to the practice the purchaser himself follows in selling his own products or services.

Delayed action by the sales engineer in taking prompt steps to correct troubles experienced by his customers, even though the delays come about through conferences or correspondence, may well lose for the supplier the pronounced advantage that comes from seizing an opportunity to impress the purchaser with the sales engineer's ability and interest. Long-drawn-out arguments about responsibility consume time and expense and are consequently costly from every point of view.

Certain classes of apparatus receive very hard usage. Certain parts must be renewed more frequently than others. In such an instance there is a chance for the sales engineer—one that should never be overlooked—to sell spare parts at the time the initial sale is made. Also he should make sure to show the purchaser how quickly and easily a defective part may be replaced.

Every well-run company has a means and plan for handling complaints. Most manufacturers of equipment have service facilities located relatively close to any purchaser's plant.

For the successful sales engineer, these opportunities are important:

Sell your maintenance facilities to the prospect, because, though the high quality of your apparatus must be sold, its maintenance in operation is equally important.

Keep in close touch with every move made by your service men, and capitalize their skill and success with your customer. They can invariably help you, and teamwork is important.

See that weakness in apparatus is promptly reported to your headquarters. Improvements in design and manufacture result to a large degree from the experience of the user of the equipment.

Don't avoid complaints. Investigate and act promptly. When the difficulty is real and the trouble has been corrected, double-check the results and emphasize in your selling the service you and your company can give. Use the proper correction of complaints and trouble as a tool to get business.

Working with Others

We have seen that modern production and distribution call for a greater degree of "specialization" and "cooperation." Each individual develops a definite skill in a certain direction, but using this skill successfully rests more and more on his ability to work with others. Results come from individual effort *plus* organized effort. The sales engineer usually must take orders from others within his own organization and also give them. He gets nowhere unless he is supported and also supports others. Some sales engineers fail to employ the same tactics with those in their own organizations as with their customers, failing to realize that human nature is much the same no matter where it exists.

Invariably the sales engineer depends upon cooperative effort from his "home office." Although his business is to place himself in the position of the customer and fight for his interests, he must of necessity have at heart the interest of the company he works for and must get the support of those at his headquarters.

A better understanding of the other fellow's problems and obstacles is vital, particularly within a given business organization, for a large percentage of all difficulties is due to misunderstandings. The individual dealing with products and paper work, and not knowing what the salesman must encounter in getting business, may easily reach the conclusion that, with a competitive quotation available, success comes only through exposing oneself in a friendly way to the prospective buyer. Again, the salesman,

being familiar with both the customer and his requirements, may well fail to realize that the man within his own organization who provides him with quotations or handles orders has little to guide him other than the written message. Also the salesman must remember that his correspondent at headquarters must deal with others who are even less familiar with customer and sales problems.

Most sales engineers have, or in time will have, assistants to handle office work. Training such men properly strengthens both the sales engineer and the organization of which he forms a part. Being the leader, he is most responsible for helping those who later will follow him and take his place.

Suggestions such as these, for the salesman, have proved to be of value:

Any sales assistant selected for the purpose of later developing into a sales engineer should be treated not as a "personal flunky" but as a younger business associate. He should be allowed to assume responsibility as fast as he can take it. Some matters of importance should be delegated to him in addition to matters of routine.

The sales assistant should be led to understand that he is not a routine office worker, but an inside salesman, and his work in making quotations, handling inquiries and complaints over the telephone, and preparing orders for entry can attract or repel a customer, or make or break a sale.

Time should be spent in explaining to the sales assistant how negotiated business is handled and the peculiarities of customers, and frank reasons should be given for success or failure on a certain undertaking.

Some time should be devoted to introducing the sales assistant to customers. When customers come to the sales engineer's office they should be made acquainted with the sales assistant's contributions to some successful sale.

As soon as advisable, the young sales engineer should be taken on short trips to meet customers. He will have a chance to get acquainted and build up confidence.

On the other hand, the young man assuming the position of sales assistant can help himself in such ways as these:

Understanding the reason for doing what is done, and also the best method of doing it, by repeatedly asking questions.

Determining the peculiarities of customers and their personnel.

Keeping files and papers "shipshape" and available for quick reference.

Being continually prepared, much like the young doctor assisting the surgeon, to help in the next step, keeping in mind the query, "What would I do under such and such conditions?"

Developing a prompt, pleasant, and accurate method of expression in letter writing and in the use of the telephone.

Expanding his knowledge of the equipment his company sells, and the various ways in which it is put to use.

Proposals and Contracts

Ordinarily the sales engineer in preparing a formal proposal can do so either with the information available to him at his office or with added or complete information to be obtained from his headquarters. In the latter instance it is surprising how much time is lost and how much expense piles up due to the incompleteness of the original request for information from headquarters. Aside from the delay caused by additional requests, one letter alone may cost several dollars calculated in the sales engineer's and secretary's time and overhead.

It is surprising also how much time is often wasted by sales engineers, owing to the fact that, when orders are obtained and equipment or service contracts signed, all details are not properly settled or provision is not made for unusual conditions.

On sales of minor importance or for standardized and catalog items, most suppliers are satisfied simply with an order from the purchasing official of the buyer, properly signed by an individual having the authority to do so.

In accepting orders or entering into contracts, the sales engineer makes sure that the financial credit of the purchaser is acceptable to the supplier. Usually the home office financial personnel follows the credit standing of purchasers and can readily advise the sales engineer about the credit responsibility of the buyer. On large and important purchases, because of their size and the fact that fulfillment may extend over a period of time during which the purchaser's condition of credit may alter, it is customary for special investigation to be made and specific approval obtained by the sales engineer from the financial officer of his company.

Orders for apparatus obtained by the sales engineer should provide for these essentials:

The proper signature, establishing the legality of the purchase order.

An exact description of what is to be furnished. On standardized items, or those duplicating previous purchases, the type, style, or catalog number may fully identify what is to be supplied.

The price, either net or modified by a discount which may apply to the particular purchaser, and at point of shipment or otherwise.

Date on which delivery is to be made, and, if there is more than one item, whether partial shipment is to be made.

Shipping instructions, as to route, method, and destination.

Terms of payment.

Sales engineers should always remember that the supplier's responsibility, as far as technical fulfillment of the order is concerned, is completed when delivery is made, either to the common carrier, the purchaser, or someone designated by him. Since the supplier usually cannot reasonably assume the risk for what he has sold after it has left his hands, sales are commonly made on the basis that his responsibility against loss, injury, or delay ceases when delivery has been made to a common carrier. Thus sales are usually made f.o.b. point of shipment, and, if the supplier stands the delivery charges, this is indicated as a price allowance granted the purchaser.

The method of packing for export shipment is usually more

complicated and expensive than for domestic shipment; therefore, when such packing is required, it should be indicated on the order.

Sometimes the purchaser alters his plans after an order is placed and desires to cancel it. Most suppliers establish rules for cancellation, the purchaser being charged an increasing amount, depending on how far manufacture has progressed.

Contracts signed for large and important items of equipment, or for a multiplicity of items constituting an installation of related equipment, are of a more complicated nature than orders just discussed. Usually such contracts are prepared by the sales engineer or his headquarters' personnel in the form of a proposal and consist of the original and several duplicates. The proposal is submitted to the purchaser and when signed constitutes a contract, the original copy of which rests in the hands of the supplier, the duplicate being retained by the purchaser. The supplier ordinarily has available a set of printed legal forms which are filled in to cover details relating to the immediate transaction. The printed portion of such forms includes fixed stipulations applying to all sales contracts the supplier enters into. In some instances, the laws of individual states may make necessary altered contract forms for individual localities. These general terms, appearing in printed form, relate to the responsibilities of both parties, usually affecting the matters of general performance, guarantees, patent responsibilities, failure due to strikes or acts of God, funds of payment considered legal, and items of an over-all nature. Consideration must be given to any special taxes that apply to the transaction, such as state or sales taxes.

Points the sales engineer should watch for in preparing a proposal which, upon signature, becomes a contract are these:

A clear definition of what is to be supplied, usually based upon technical drawings and specifications.

A clear definition of any guaranteed technical performance of the product, and, if tests are required to establish such performance, the conditions under which these are to be made should be clearly defined.

A clear definition of the responsibilities of each supplier if the equipment sold must be assembled or must operate in conjunc-

tion with other equipment to be furnished by other suppliers.

A statement as to whether the supplier is responsible for and undertakes the installation or assembly of what is to be furnished. If not, whether he has any responsibility in the supervision of such work which might be done by the purchaser, or others.

In addition are such items as price, date of delivery, shipping instructions, terms of payment, etc., discussed earlier in connection with orders.

In the preparation and execution of contracts an unusual opportunity exists for the sales engineer to avoid subsequent misunderstandings which involve time, expense, and disappointment to customer and supplier alike by making the written agreement clean cut and comprehensive. This is particularly true of contracts involving combined apparatus and services, and those in which a third and sometimes a fourth party is involved.

Not long ago a sales engineer entered into a contract to furnish several automatic coal stokers to be used with boilers to be installed in a large power plant. The details of these stokers were to receive the formal approval of the consulting engineer and were to be installed as a part of the complete boiler equipment immediately after the boilers themselves had been put in place and while the supporting and enclosing structure was being completed. The stoker manufacturer was to furnish the purchaser with erecting men and supervisors to install the stokers, at the purchaser's expense, and also supply an engineer to supervise operations when they were first put in service. The sales engineer, though receiving verbal approval from the consulting engineer as to the use of his stokers, had failed to obtain his formal approval of the drawings of the particular type and rating of stoker to be used. Furthermore, the sales engineer entirely neglected to specify in his contract the rate to be charged the purchaser for the time of the erecting men and supervising engineer. These points which were not taken care of at the time the contract was signed caused argument, undue expense, and dissatisfaction to all who were involved, and undermined the position of the sales engineer.

After Obtaining the Order, What Next?

No job of sales engineering is complete when the order is obtained. Usually the greatest opportunity of all then exists for the sales engineer to show how well he and his company can strengthen and prove the purchaser's confidence, and thus pave the way for additional future business. The decision of those having most to do with awarding the business to the salesman has here a chance to be vindicated, and the position of the salesman enhanced for future business.

A sales engineer of a textile machinery manufacturer is always on hand when the machinery he has sold arrives at the mill and is being uncrated. He wants to see that the equipment is received in proper condition. He stops frequently at the mill to see that it is being installed correctly and always is there when it is first put into service. His purpose is to see that the purchaser gets the best results possible right from the start. He reports back to his factory any deficiencies. He carries a pair of overalls in his car and is ready to jump into the thick of things with a hand here or an intelligent suggestion there.

Another sales engineer selling power-house equipment follows closely the installation of the equipment. When it is completely set up and operating satisfactorily, he calls upon the officials of the purchasing company particularly interested in the purchase and invites them, at a convenient time, to accompany him and the purchasing engineer to inspect the installation. Such an inspection trip pleases the purchasing and installation engineers with whom he has been working, provides an opportunity to explain further the advantages of the equipment sold, and convinces the purchaser's officials of the earnest desire of the sales engineer and his company to see that the purchaser is

completely satisfied. It furnishes an opportunity for intimate contact with top purchasing officials.

A sales engineer selling large machinery for pressing, bending, and shearing of metal, much of which is built especially to meet particular conditions of service, always follows the plan of working directly with the operators of the machine after it is installed and started, to see both that the operators understand the machine and its performance completely and that the machine itself is working in a thoroughly satisfactory manner. Furthermore a series of tests are made upon each machine in operation, showing the results obtained and the power consumed. Such information proves of great value in sales and engineering application work for use in prospective installations which the sales engineer may encounter. It further proves to the customer the suitability of his purchase and the interest and ability of the supplier. In addition to such tests, photographs of the machine are taken, showing as closely as possible the manner in which the machine is installed and the class of work it does. "Before and after" pictures, showing the product as processed, often prove to be most valuable in the preparation of literature and other sales-promotional material.

Where machinery or equipment is sold to the purchaser for use in his plant, or to be resold as a part of the complete apparatus he builds and sells, an opportunity exists for the sales engineer to talk with those whose duty it is to maintain the apparatus, showing them exactly the attention required to keep the apparatus in successful operating condition. This in itself may avoid complaints or requests for service later on.

The importance of wise capital investments for productive facilities, of such interest to the sales engineer, has already been emphasized. Paralleling this is the importance of making such investments *yield a profit* after they are ready to produce. The interest of the successful sales engineer does not cease until what he has sold is yielding its greatest profit possibilities.

A sales engineer sold several elevators to a department store. These, having been installed and tested, fully met the specifications and guarantees. After they had been in operation for a

few weeks, this sales engineer, not satisfied that the customer was getting all he could from the installation, made further observations and tests under a variety of daily operating conditions. These showed further efficiency in operation would be possible through adjustments in the operating mechanism, changes in operating schedules, and suggestions to the operators. His recommendations were followed and more efficient performance obtained which well exceeded the original guarantees. This so pleased the owner and the manager of the store that, when two freight elevators were bought for the company's warehouse a few blocks away, the sales engineer obtained the business without serious competition.

Certain types of apparatus which get hard service, such as that used in many mining operations, will frequently require the replacement of parts because of wear or breakage. The sales engineer, knowing this, can coach the purchaser on what to expect. Reference has already been made to selling repair parts as a part of the initial order.

PART FOUR

Selling to Those Who Buy for Resale

Selling to Resellers

So far we have devoted our attention largely to the work of the sales engineer selling the ultimate purchaser and user.

In the previous discussion of distribution reference has been made to various classes of outlets which operate in a resale capacity. A wide variety of such outlets or resellers developed over many years hold an important functional position between the manufacturer and the ultimate purchaser. The character of such resellers varies greatly, depending mostly upon:

The size of the machinery and equipment to be sold.
The degree to which it is built to fill a particular order, or built for stock.
The amount of engineering skill required in its application and sale.
The number and geographical location of potential purchasers.
The degree to which it is self-contained and readily usable, or forms a part of other machinery and equipment.

The manufacturer may, therefore, be confronted with the problem of selecting one of a few methods of distribution. He will naturally give consideration to the various sales functions which different resale outlets are equipped to perform, such as their ability to sell, promote, stock, and service. Besides, he will be influenced by the functions of credit approval, order handling, shipping, and collection. On simpler standardized items with a broad demand, the manufacturer may choose to sell to wholesalers, who in turn sell to local dealers.

It will be apparent that standardized technical products finding a large use, even though skillfully designed, soon fall into the class

of merchandise and require business skill rather than engineering skill in their distribution and sale.

We shall now consider the commonest opportunities for the sales engineer in selling those who act as resellers of machinery and equipment.

Original Equipment Builders

With an increase in specialization in products built and an increasing tendency for the supplier to furnish the ultimate user with his equipment complete and ready to run, a steady increase in interindustry selling of this sort is natural. The builders of machine tools, pumps, compressors, cranes or hoists, refrigerators, washing machines, office appliances, and machinery of many other classes require electric motors and control, brakes, speed reducers, and instruments. Engine builders require batteries or air compressors, carburetors, and magnetos. In fact, few important classes of apparatus are built in their entirety by one manufacturer. In many instances the item of apparatus sold may pass through many hands. For example, the builder of brakes may sell his apparatus to an electric-motor manufacturer for mounting, who in turn sells the assembled unit to a machine-tool builder, before the completed equipment starts on its way to the machine-tool dealer, and thence to the user. Some classes of equipment, to be complete, may need additional apparatus involving a very substantial outlay, as, for instance, a steam shovel requiring a steam boiler or engine, or a Diesel-engine-driven power-generating unit, requiring an electric generator and control. For important units such as these, the auxiliary apparatus purchased for resale is bought to meet the requirements of the particular order to be filled and may be selected from a number of possible suppliers. On the other hand smaller equipment may be built in quantities, and the apparatus pur-

chased may be engineered or tailored and standardized for the particular equipment. In such instances, the equipment builder usually adopts only one or a very few makes of purchased apparatus, buying duplicate units in quantities.

The aim of the equipment builder, as a purchaser for resale, is to make his complete equipment of greatest acceptance to the ultimate user, with the least expense and trouble to himself. He is attracted by such advantages as these:

Engineering service in the application and adaptation of the purchased apparatus to his equipment.

Punctual delivery of apparatus at exactly the time it is required, so that his equipment may be completed and delivered promptly.

Maintenance service for the apparatus bought, in the event that difficulty arises when it is in the hands of the ultimate user.

Prestige gained through the use of apparatus of acknowledged quality and reputation as a part of the equipment he sells.

Various kinds of assistance which the apparatus supplier might furnish the equipment builder, such as assistance in marketing or furnishing helpful suggestions about the design and manufacture of the complete apparatus.

Price, for in many instances the purchases for resale constitute important elements of cost.

Selling to equipment builders who buy to sell again is a different problem for the sales engineer from selling to the ultimate buyer. In selling to the ultimate purchaser the sales engineer usually works upon one negotiation after another, until the individual order is obtained, lost, or abandoned. Not so with the sales engineer who is trying to get the acceptance and adoption of his products by the equipment builder, who is a steady and continuous purchaser. Months of sales and engineering work may be required to get the equipment builder to standardize on a given type and make of product, but, when once done, the business flows in a procession of orders to the sales engineer, provided that both product and service are satisfactory.

Such outlets for the sales engineer's products as these take on a degree of permanency which justifies specialized and concentrated effort. Selling effort of this sort closely resembles the kind

of work necessary in getting an underground supply of water. Hard and persistent work is required in drilling a well, and it is often some time before the driller reaches water, but after a source is obtained, the supply depends upon a simple and reliable pumping service.

Some detailed suggestions that will help the sales engineer in developing business with original equipment builders who buy for resale are sketched in the following:

Equipment of a new or improved design is continually being developed, both by existing manufacturers and also by new concerns coming into the field. Close contact on the part of the sales engineers with such developments at their start is most important, because designs are being crystallized, engineering and application helps are then of greatest value to the equipment builder, and standards are being established for future production.

If the apparatus sold by the sales engineer is actually built into the complete equipment, and standardized as a part of it, often requiring modification to meet special conditions, technical assistance rendered to the equipment builder at the right time creates an obligation to the sales engineer and his company that cannot easily be broken down. Sample apparatus and a series of tests upon it in conjunction with the complete equipment may be necessary to make sure that it is suitable.

Many original equipment builders require standardized types and sizes of apparatus to be furnished with or as a part of the equipment they build. Selection is made of the right type and size to meet the requirements of each order. In such instances the duty of the sales engineer selling the original equipment builder is to supply complete technical data, prices, and a delivery schedule in advance. He tries to make it easy for the original equipment builder to include the apparatus he can furnish in every quotation made or order obtained.

Most original equipment builders sell over large areas, or over the entire country. Some system of maintenance service must be furnished upon the equipment sold. Since the apparatus sold by the sales engineer and incorporated with the equipment may fail, the apparatus builder enters directly into this servicing program. Thus the sales engineer must make sure that facilities and a system

are provided that will cover all items he sells to the builder. His ability to do this is a strong selling point.

The sales engineer will readily see that, since both he and his customer are equipment builders, many selling problems exist in common. There is therefore an opportunity for a variety of sales helps which the sales engineer and those within his own company can render.

Selling effort can profitably be directed not only to the original equipment builder, but also to his distributor, contractors, and the ultimate purchaser to whom the latter sells. Any one of these may be an important force in favoring or specifying the sales engineer's apparatus on the equipment sold.

A Diesel engine sales engineer in the East successfully sells his engines to a pump manufacturer who sells the combination largely to leading petroleum companies. This sales engineer has maintained an enviable position because he has done a complete selling job. He has sold the pump builder and contacts their headquarters and their local representative. He has sold several leading petroleum companies, both their engineers and their salesmen, and has induced them to specify his engine on each order for pumps placed. This engine salesman has also made sure that his own company's representatives covering the oil fields contact the operating men of the petroleum producers and refiners as well as the local representative of the pump builder, to see that help is given and maintenance service rendered.

Selling apparatus to the original equipment builder is "team-selling" to a peculiar degree. There are numerous helps one apparatus builder can give another equipment builder. These helps may relate to broad company activities. There are many instances where the sales engineer connected with a live apparatus builder can get his company personnel in other districts to "team up" with the equipment builder's representatives. Assistance can also often be given on points quite unrelated to sales. Plant management, production, design, engineering, industrial relations, accounting or finance—all are problems that are common to both buyer and seller, because both are themselves apparatus builders.

Let us illustrate the methods followed by a sales engineer representing a builder of small refrigerating compressors:

A sales engineer is attempting to obtain business from a manufacturer of ice-cream cabinets, who supplies complete units, including motor-driven compressors, to retailers of ice cream. The compressor manufacturer builds only the compressor, purchasing the motor from an electrical apparatus manufacturer (the sale of which also represents a good example in selling to an equipment builder) and mounting the two together on a common support, so as to form an integral unit.

The sales engineer's first attempt, after interesting the cabinet builder in his company and its compressor units, is to analyze the exact requirements of each size of cabinet, to determine the capacities of compressor units required. He realizes that his recommendations must be sound, for the cabinet builder will use a large number of compressor units. They will be scattered widely, subjected to severe service, and receive scant expert attention. He obtains permission to furnish samples, which the cabinet builder agrees to submit to laboratory tests. Two sizes of compressor are tested, the sales engineer personally following the test work carried on by the cabinet builder's engineers. The results of the tests he checks very carefully to make sure that the conditions of operation represent the most difficult that will be encountered in actual field service.

With these conditions satisfactorily met, the sales engineer is confronted with selling the advantages of the compressor units he offers. In this instance, the purchaser's interest, and consequently the sales engineer's efforts, center upon such factors as these:

Efficiency of the compressor units based upon power input and refrigeration delivered.
Quiet operation during the life of the unit.
Reliability in service.
Minimum maintenance expense.
Simplicity in matters of service and repairs.
Ease in mounting compressor units in the cabinets.
Minimum space requirements.

Minimum weight, affecting handling and transportation expenses.

Price in quantities, and terms of payment.

In addition to these factors, which relate specifically to the apparatus, the sales engineer proceeds to demonstrate the ability of his company to render a superior form of service as a supplier. Consequently he stresses such factors as the following:

Ability of his company to meet initial delivery required and subsequent suitable commitments exactly as specified by the cabinet builder.

A plan to instruct and guide the purchaser's field service men in the correction of compressor failures.

Presentation to the cabinet builder's salesmen as a group, of a demonstration calculated to familiarize them with the operating merits of the compressor units. They in turn can utilize such selling points in gaining acceptance for their complete cabinets.

Provision of a plan for rebuilding or repairing compressor units that fail in service, according to a schedule of prices.

Plans for directing publicity and general advertising effort upon compressor units, so that a share of it will further the merits of the purchaser's ice-cream cabinets.

In negotiating this business the sales engineer found it helpful to take one of the cabinet manufacturer's officials to his factory to inspect the plant equipment and processes, of which he was very proud. With constant effort on the part of this sales engineer, and skill in sales presentation, he was successful in obtaining an order for one hundred compressors, which were placed on machines and put in service. The sales engineer followed the operating records of these closely. These proved the sales engineer's claims, and in three months' time an order for one thousand compressor units was obtained. The results of a large amount of effort thus finally bore fruit in a valuable flow of repeat business.

Another illustration shows how a sales engineer proceeded where much larger apparatus was involved.

A sales engineer for a manufacturer of large electric generating apparatus and switchboards endeavored to interest the manufacturer of Diesel engines engaged in building and selling power-generating units to summer hotels, construction contractors, crossroad villages, and the like. Each unit was built only to fill a customer's order, although many duplicate parts of the engines were built in small quantities for factory stock. Each unit consisted of an engine to which a generator was attached, giving the appearance of a closely knit or self-contained unit. The switchboard for each unit was separately mounted and was usually located close to the unit.

The first step taken by the sales engineer, after establishing the engine builder's confidence, was to obtain complete engineering data upon each size of unit. This permitted him to furnish generators of correct ratings, dimensions, and with the desired flywheel effect in the rotating element. Requirements of the switchboard apparatus were also obtained. From these data, detailed drawings and performance data were prepared by his headquarters. Armed with such information the sales engineer proceeded to establish in the engine builder's mind the merits of both generators and switchboards. Such advantages as these were particularly stressed regarding the generators:

> *Operating efficiency at various loads. Materials used in construction. Accuracy of machining. Ease of assembly. Accuracy in balancing the revolving element. Quietness in operation. Accuracy in voltage regulation.*

The sales engineer was successful in gaining the engine builder's approval upon the suitability of the apparatus. Next he had to establish the ability of his company to meet requirements regarding price, terms, and also delivery, so that the engine builder could depend as completely upon the performance of the electrical manufacturer as he would upon any particular section of his own plant. This the salesman was able to do, through reference to service furnished to other equipment builders and his ability to render field service both on the generators and the control.

Though this sales engineer was successful in establishing the merits of his products and services, he could not get the engine

builder to agree to quote upon his apparatus consistently, because many orders obtained by the engine builder's salesmen specified by name generators and switchboards built by his competitors. To do a complete selling job, it was therefore necessary to see that all the engine builder's sales engineers were favorable to the sales engineer's products and services, and also that the ultimate purchaser either specified his apparatus or offered no resistance when the engine builder's sales engineers proposed supplying it. Since both the engine builder and the electrical manufacturer sold their products over the entire country, organized sales effort by the electrical manufacturer's salesmen was required, as well as attentiveness in spotting individual pending negotiations to see that the ultimate purchasers of these units desired the electrical manufacturer's products upon units they bought. The electrical manufacturer, therefore, set in motion a plan for contacting and cultivating each engine builder's salesman and placing in his hands useful sales information upon the electrical equipment that could be furnished as a part of the engine-driven units.

Machinery Dealers and Manufacturer's Agents

A large share of machinery and technical apparatus is sold to the user by independent machinery dealers selling on a commission basis. The sales engineer, working for such concerns, operates in much the same capacity as the sales engineer connected with the machinery builder, who, through a matter of policy, sells his apparatus direct to the ultimate user.

However, where the machinery builder sells through local dealers or manufacturer's agents a certain amount of selling effort is

required on the builder's part to sell, assist, and serve the local dealer consistently.

Since most machinery dealers handle a few complementary lines built by different manufacturers, each manufacturer is competing for the interest and time of each of the dealer's sales engineers. The manufacturer must maintain close contact with the dealer, not only to see that he is active but also to learn of market requirements, make sure that proper selling data is prepared and that the manufacturer supplies current information timed and tailored to meet the dealer's needs.

Some manufacturer's relationships with their dealers are so intimate and so long-standing that they closely approach the position of being the manufacturer's own district office and sales force. Some manufacturers train men with the direct purpose of placing them permanently with the dealer.

The manufacturer directs his attention to stimulating dealer effort. This in itself is a high-class sales engineering job done by the sales manager of the manufacturer himself or by sales engineers assigned to broad areas that include several dealers. Such manufacturers' sales engineers must continually train the dealers' sales engineers. They must be prepared at all times to step in and assist on large negotiations and help by furnishing high-grade technical skill on the particular machinery sold. They are experts not so much on customer relationships as on the product sold.

When we consider the dealer who purchases equipment and supplies to resell to the industrial market, we encounter a wide variety in the type of outlets. Some specialize on one or a few highly technical products, such as complementary types of simple tools; others sell a wide variety of products, as does the mill-supply house. Those standardized products with wide acceptance fall largely in the category of merchandise.

The sales engineer charged with selecting, training, and supervising resale outlets such as these finds himself somewhat in the position of a sales manager. Not only must he himself possess sales ability but also he must be familiar with practices followed in distribution and be capable of analyzing markets, selecting potential outlets, organizing man power, and supervising sales operations.

Most manufacturers selling through resale outlets of this sort

are confronted with the problem of maintaining the interest and activity of the dealer's salesmen in the particular line of apparatus or supplies that the manufacturer sells through them. Since the various manufacturers thus represented by a dealer are competing with each other for the time and interest of the dealer's salesmen, sales-promotional effort is continually required by the manufacturer's own sales force. It must be directed to gain popular acceptance for his products from ultimate purchases, and also directed to the dealer and his salesman to get them to exercise aggressive sales effort.

Another problem confronting the manufacturer is to get the dealer to devote proper attention to those customers who require technical service. The dealer's salesman, often being a "jack of all trades," is inclined not to acquaint himself sufficiently with work of this kind, but rather to pick up business here and there from the purchaser who knows what he wants.

Since such a large share of sales effort of this kind leads into the field of industrial merchandising, which is somewhat removed from the work of the sales engineer, the subject will not receive detailed consideration here. However, to illustrate how sales-engineering effort often is a factor, the following instance may be helpful.

A sales engineer representing a manufacturer who furnishes "V-belt" drives, consisting of a wide variety of standardized V belts and grooved pulleys, sells his products largely through heavy hardware and mill-supply houses. Naturally there is a large demand for such items from industrial plants as replacements in connection with operating machinery. Most customers order these from the dealer by style number, as catalog items. A distinct field of sale, however, exists among machinery and equipment builders, who require these items as a part of a machine or assembly of machines. The sales engineer representing the manufacturer found that the dealer's salesmen paid little attention to this market, because technical recommendations were usually necessary, at least when the machine was being designed and developed. This sales engineer was well able to determine the proper size and number of belts necessary for a given application and also recommend the proper sheaves to use. His broad knowledge in the application of these prod-

ucts enabled him often to recommend their use, where other forms for power transmission involving an increase or decrease in operating speeds were under consideration. He therefore visited one dealer after another, spending several days in the territory of each, where he selected prospective customers of the type referred to and called upon each one, approaching the sales problem from an engineering application viewpoint. In each instance he took with him the local dealer's salesman. Far-reaching results were obtained, for he not only made sales and opened up repeat business but also, what was more important, trained and inspired the dealer salesman to go after this class of business intelligently and aggressively.

Mill-Supply Houses

A large number of mill-supply distributors has developed over the country, who sell smaller types of standardized machinery and a wide variety of industrial supplies. In the machinery field, they commonly sell such items as general-purpose machine tools, small hoists, portable electric tools, standard motors or pumps. These companies assemble their own catalogs and stress sales promotion and selling rather than engineering. They are well-equipped industrial merchandisers.

Sales engineers assigned by the manufacturer to sell these mill-supply distributors must be clever salesmen as well as organizers and leaders. Here again, the manufacturer is in keen competition for the time and attention of the mill-supply salesman. Each must be expert in training the mill-supply salesman in his particular product. The work is largely promotional and educational, and to a much lesser extent like the work of the sales engineer who sells the ultimate user, for in this instance he multiplies sales effort through others.

PART FIVE
The Training and Development of the Sales Engineer

Progress Should Be Planned

The first job of every sales engineer is to learn how to develop himself. Every successful sales engineer learns to be a sales manager—a manager of himself. He adopts a plan and a program. Even though these may alter as opportunity, circumstance, experience, and interest change, nevertheless, they should exist and serve to shape progress in a definite direction.

It is well to remember that in the field of selling the sales engineer has two broad paths of advancement within a company. One is to become continually a better sales engineer and advance largely as an individualist. The other is to develop executive ability, so that he may become, for instance, a district manager or a sales manager, or finally at the very top of the company for which he works.

A skilled surgeon may advance as a surgeon owing to his personal skill. Another, possessing ability to organize and direct a group, may become head of a hospital. Both may be equally valuable to society. With the growing importance of distribution as contrasted, for instance, with design and production, it is increasingly common to find, at the head of many of our producers of machinery and equipment, men who came up from the ranks of sales engineers.

The young sales engineer may find as he advances that his talents and interest change. He may lean toward those activities allied with selling, such as advertising and sales promotion, or to market research. Or again, he may find that his final interest lies in design, production, or financial matters. If he is with a fairly large company opportunities in such directions may exist. In any event, an interest in and knowledge of markets and customers is an excellent approach to advancement along many lines.

Plans and programs for the self-development of the individual may therefore change, but they are essential to the successful development of the individual.

A Broad Personal Development Program for Selling

Thousands of young sales engineers start work after their schooling only to attain very limited success. They sooner or later appear to reach their limit. In time their focus is shortened and range of vision narrows. They stop growing.

In questioning many a sales manager or supervisor and pointing to some sales engineer, I have repeatedly received such comments as these: "He isn't aggressive enough." "Never got thoroughly interested in his work." "Lacks native ability." "Can't develop a pleasing personality." "Isn't dependable." "He can't keep on the track."

Note that none of these comments relate to his lack of technical knowledge or its application.

Often such weakness reflects in part, at least, upon the sales manager himself. He may be unable to study his men, give them friendly advice, and lead them.

But failure may be largely due to definite weaknesses in the sales engineer as a person. He may fail to analyze himself and his efforts consistently. He may lack the framework of a plan for development and advancement. His foundation may be weak, that is, he may lack the ability to broaden his knowledge and interests. Or, again, the spark of fire that sets ablaze the urge toward accomplishment may not have taken hold—he lacks the "will to do" or is "just plain lazy."

Nothing, then, will help a sales engineer more than to recognize those characteristics that lead to success and constantly check himself and his actions. Recognizing the weaknesses is half the battle. The other half consists of having the will to turn negative qualities and actions into positive ones.

Before we touch on the main factors that help the sales engineer to develop those qualities that apply to his specific work, let us consider the importance of developing a broad foundation.

Looking at the modern city we see buildings of one or more stories. Ordinarily you can't add many floors to a building simply because the foundation won't stand it. About all that can be done is to tear the building down and start again.

Not so with the individual. He may lack a breadth of training or what we call "native ability," but with a plan and a "will to do" he can strengthen and broaden his foundations as he grows in stature.

The necessity of breadth and depth of foundation is repeatedly illustrated as our own experience increases and as we compare individuals. One is narrow and confined in his knowledge, interests, and views. He can think and speak only of his particular work. He is often prejudiced, lacks breadth of vision, and shrinks from contact with those not in his particular line of activity. Another, with an inquiring and penetrating mind, has broadened his interests. Though an authority in his particular field, he has other interests and contacts and can take his place in society with an appreciation of his relations to it. He grasps the significance of his particular work as a part of the whole.

Some may question the wisdom of combining breadth of vision and knowledge with a high degree of specialization. Yet the results of accomplishment on the part of the sales engineer are remarkably evident when we consider the position he may attain. One man only goes through the motions of a specialized technical selling. The other has a broader vision of his place and his work in business and society. Basically his interest radiates from mechanization. But mechanization depends upon finance and business. Its effect on social progress is profound. It is associated with the field of economics, scientific progress, and even politics.

It is surprising how the broad-gauge sales engineer can help himself in his own particular business through activity, acquaintanceship, and grasping ideas, many of which finally find focus in possibilities of business for him. The mere fact that he meets a variety of people widens his scope, activates his mind, and enlarges his chance to find and meet business opportunities in process of formation.

In planning a course to extend personal development, particular attention should be given to a chosen program of reading, participation in group activities, and some formal courses given by educational institutions.

Time is limited. No individual can extend himself too far beyond his business. He has responsibilities at home. He cannot afford to scatter his efforts. He must choose carefully the activities he enters, basing his choice on whether they are worth while and whether they will furnish personal and permanent satisfaction to him. He must be prepared to contribute genuine effort, for only through contribution can permanent benefits come to him.

Much time is often wasted in reading literature possessing little substance. High-pressure selling is responsible for distorting the possible value of many books. Books should be carefully chosen from the viewpoint of the reader's investment in time. Particular attention should be given to books dealing with economics, social development, and psychology. To one good journal on current events should be added a good business paper and a trade journal dealing with the industries that interest the sales engineer most.

The opportunities to participate in group activities are numberless. They extend from activity in sports, to social, church, and civic affairs. One criticism justly hurled at the engineer is that he centers his eyes on technical development and gives little consideration to the implication and effect of scientific progress on social, economic, and political progress. The first duty of every engineer is to be a good citizen.

In the larger metropolitan centers evening courses are available in a variety of subjects. For a few years, at least, it may be a paying investment to take some educational course for one night a week.

Developing Sales-Engineering Ability

We shall now turn to the specific subject of developing sales-engineering ability.

When one has contact with a large number and variety of purchasers, it is interesting to ask them from time to time why they do not purchase from a particular sales representative who has made an effort to obtain business from them. Replies often include statements applying to the sales representative himself, such as these: "It seems he cannot understand my problem." "He does not seem to know what he is talking about." "The fellow himself and the company he represents never particularly appealed to me." "He never made a real effort to get my business."

These four weaknesses are fundamental. They point directly to the four points on the sales engineer's compass that directs his progress:

Knowledge of customers and market.
Knowledge of products offered for sale.
Development of personal characteristics of the sales engineer.
Development of sales skill and the will to apply it.

The market is made up of customers, any one of whom is a part of some definite industry. Some customers manufacturing a variety of products may be included in more than one industry group. For instance, one company operating separate divisions or subsidiaries may make chemicals, rayon, and textiles. Each customer possesses individuality, as does each industry. Both may have a technology largely their own, as to process of operation and business economics. Customers' interests differ, their degree of activity in the business world varies, and only a few of them adopt identical policies. Individual plants differ in their condition of mechanization. Therefore the sales engineer, to be successful,

must be familiar with the customer and also the industry in which he falls.

Each sales engineer must be thoroughly acquainted with the *apparatus he sells.* He must know why it is designed as it is, how it is installed, and how it is operated. Especially he must know what economic results can be obtained in various conditions of use. Besides the apparatus itself, he must be completely familiar with his company's policies of sale.

In addition to understanding the market and the customer, the sales engineer faces intimate problems of *self-analysis.* To advance, he must study and evaluate his own make-up—his personality. This requires a power to see oneself as others see us. Personal and business habits are formed through repetition, and in time actions become largely subconscious. Knowledge of oneself can guide these habit-forming forces.

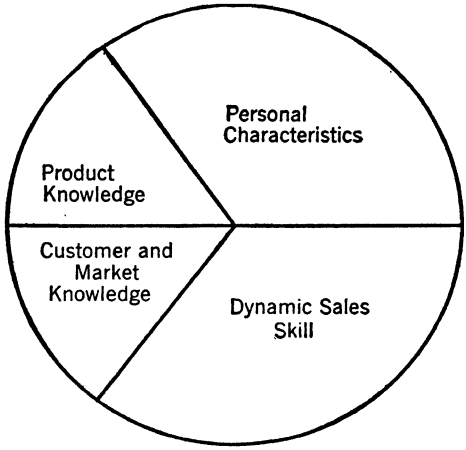
The development of *dynamic sales skill* and a "will to do" are required of every sales engineer. He must learn to act and react in a positive way to every environment and to the particular situation that exists at the time. Tapping a wealth of resources—ideas—he learns almost intuitively to select the right move for a given occasion.

These four avenues of opportunity for progress—customer knowledge, product knowledge, personal development, and sales drive—must be in balance and integrated. The designer of apparatus always seeks a balanced design. He knows full well that his machine usually cannot have marked superiority to another in every respect. Much of his skill is designing for the over-all best results. In the same way the sales engineer in focusing attention on personal development must aim at the best collective result.

These four avenues of opportunity for progress we shall sketch graphically, in order that we may visualize them as a whole and separately. We shall portray them as segments making up an "area for accomplishment" which we shall consider as existing within a given circle.

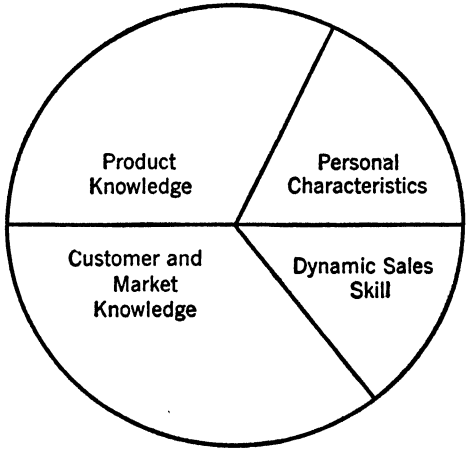
Every sales engineer is equipped, to some degree at least, with requisites required in each of these four opportunities for progress. His success will depend upon development of each of them, so that the "area for accomplishment" as prescribed within the circle will grow, and also so that the area of each of the four segments will also grow in the right proportion and relation to each other.

The successful salesman selling the simpler forms of industrial merchandise has an area for accomplishment with segments somewhat in the following proportion:



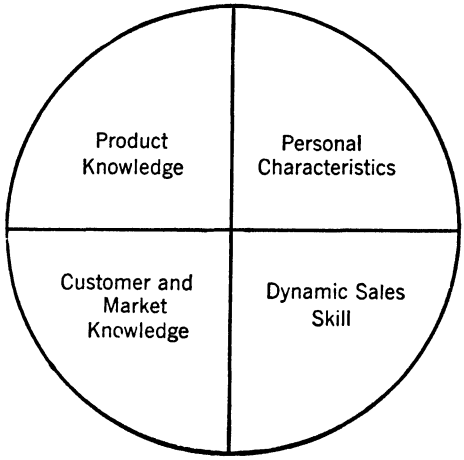
Selling comparatively simple standardized products to a market that is easily identified and characterized calls for emphasis on personal characteristics and dynamic sales skill.

On the other hand, the successful highly technical engineer, selling a highly technical product to a technical market, because product knowledge and customer or market knowledge are at a premium, may have an "area for accomplishment" something like this:



In this instance, knowledge of product and market is the salesman's chief asset, rather than personality and dynamic sales skill. He operates largely in a field of technology.

It will probably be found that the work of the average sales engineer can best be done by the individual who develops an area of accomplishment about like this:



Here the "knowledge or fact" elements, constituting the semicircle on the left, equal the "personal and ability" elements which constitute the semicircle on the right. The knowledge or fact area is again equally divided into "product knowledge" and "customer or market knowledge." The other half of the circle, constituting the personal and ability elements, is again divided equally into personal characteristics applying to the individual which we term "personality" and the "dynamic ability" of the individual to perform skillfully.

Think of some individuals you know well who are engaged in active sales-engineering work, and sketch for each the areas of accomplishment, both as to total size and also the relative sizes of the four sectors. For these, you will observe a great variety of sizes and segment shapes, according to your opinion of them after careful observation.

One successful sales engineer becomes almost indispensable to his customers because of his profound knowledge of the product

that he sells and the requirements of the customer, even though in personality and dynamic sales skill he resembles an usher at a funeral. But how much better sales engineer he would be if he could but increase his area of accomplishment by increasing the segments of personal characteristics and dynamic sales skill.

Another sales engineer is successful because he has a captivating personality. "My apparatus is good, and I know you must need it," he says, and customers enjoy doing business with him as an individual, though they admit that his knowledge is by no means profound. But how much better sales engineer this man would be if he could increase his areas of product knowledge and customer and market knowledge, in support of his personality.

Still another sales engineer knows his product and his market and has dynamic sales skill. He has untold energy and force, but he is repulsive and overbearing, often acting like a "bull in a china shop." People do not like him, but he forces himself in; frequently he gets action and always gives service. How much more productive he would be if he had a pleasing personality which would attract rather than repel.

The social barriers frequently existing between individuals often prevent the expression of our inward thoughts and desires.

Take one of our normal business days, and consider the thoughts that occur to us as we meet one person after another but which remain unexpressed. "Jones," we say to ourselves, "why do you wear that dirty yellow tie, and why not get a hair cut?" "Smith, why can't you get rid of that cynical smile and sweeten up?" "Murphy, I like you and your proposition appears to have merit, but you don't convince me that you know my plant conditions," and so on.

Why cannot characteristics such as these, and many more of a fundamental nature, which stand in the road to success, be corrected? They can, to a considerable degree at least, if we will only study ourselves, become conscious of such matters, and exercise the will toward improvement.

All of us have the power of analysis and the power of action. Very seldom, however, are these properly balanced in skill and intensity. Now, if we will study ourselves, fairly and squarely, and sketch our own accomplishment areas, we shall get some idea of where, in a general way, our weaknesses lie, and how we can

increase all four accomplishment areas, concentrating upon those that are weak and out of proportion to the others.

Since we grow by advice, which is sound knowledge and fact, and by experience, which comes from the art of doing, just how can these areas be increased and their proportions balanced?

The sales engineer can expand his *knowledge of the product he sells* not only by learning each day some new fact regarding it but also by finding out more about competitive and associated products and processes.

> *A sales engineer representing a firm that specializes in making stamping machinery is familiar with a process available to manufacturers of springs, stampings, and screw machine parts which enables them to harden such parts without scale or discoloration, thus preserving their bright original finish. His familiarity with this process, as well as with the solutions of many other problems, helps this particular sales engineer in his work and earns for him consideration from his customers which otherwise he would not receive.*

The number of facts to be learned about technical products is almost infinite; they include not only features of design and construction but also unrecognized uses and advantages that the product may have. As we know more of the meritorious product that we sell, our confidence in it and our enthusiasm for it increase—factors which tend to increase the right-hand sector of our area of accomplishment.

By taking an interest in products that have been sold and are in use the sales engineer learns more about those features that customers like and dislike, thus strengthening confidence and providing sales arguments, as well as setting in motion necessary improvements. Since satisfied customers provide the best sales arguments, the sales engineer's attention is concentrated upon dollar and cents results obtained by customers in the use of what he recommends and sells. He is constantly on the lookout for reliable data of this sort which will help him to sell to other prospective purchasers.

The extent to which the sales engineer increases his *knowledge of the market and customers* measures his usefulness to pur-

chasers, and consequently the business he can obtain. Reaching, as he does, many operating units with numerous problems, he has an opportunity, open in the same degree, to no others. We cannot overemphasize the principle that giving useful ideas makes selling easier, establishes the supplier in a preferred position, and disarms competition.

Current literature serves as an important source of information. The sales engineer should read trade and technical magazines dealing with industries' technical and business problems and follow the proceedings of technical and trade associations. In doing so, he should not limit reading to those phases of activity dealing with the narrower interests of the particular product of interest to the sales engineer, but he should include the broader aspects of an industry's developments, for in this way the particular industry's objectives and endeavors can be appreciated.

Sales engineers, as a class, spend relatively too much time in customers' offices, and not enough in customers' plants. A visual picture of plant equipment and processes gives rise to new ideas. Sales engineers make a decided impression upon any plant superintendent by giving him suggestions, supported by data, which the superintendent can use as his ideas toward betterment.

A young sales engineer selling equipment used in pulp and paper mills, a few years ago, was stationed in Wisconsin. He had had little experience in serving this industry. He made up his mind that he would know more about the customers in his district than any supplier of equipment. He started with a complete list of mills in the territory and some scattered information about their products, personnel, connections and financial position. He first set about training himself by systematically visiting each mill, going through every part of it, and keenly observing conditions. Not only did he grasp the technical problems involved but also he found out the conditions in each plant, enabling him to program his selling efforts in a clear way and toward efficient performance. He learned just how improvement programs originated and proceeded.

Since the sales engineer is a business man, he must know the business interest of the concerns he deals with. Why their operations are profitable or unprofitable interests him, because his part

is in helping his customers to make a profit, and the more familiar he is with matters of this kind the more helpful his work becomes. No customer shuts the door to those who understand the causes for losses and are in a position to assist in overcoming them.

Dynamic sales skill is the most difficult of talents to develop. Sales skill alone can certainly be acquired, but to kindle the spark that touches it off is more difficult. This characteristic may appear largely inborn, but it may be held back by barriers which can be removed. Two most common barriers are a confusion of interests and physical weaknesses. If non-essential interests can be eliminated and the one prime interest captivates the mind and becomes real, at least for the time being, permitting a high degree of concentration, then things will happen. The younger man usually finds that a concentration of interest in this way, and the results that come from it, bring such a flood of satisfaction that he is less likely in the future to be attracted by those diverse interests that formerly haunted him. Physical weaknesses, unless chronic, can be identified and overcome. Health rules are common knowledge, and most men are coming to realize that any mind works best in a well-exercised and well-kept body.

Skill in selling comes largely through going fearlessly ahead, noticing reactions both favorable and unfavorable, and at every opportunity correcting weaknesses and errors. Observing the tactics of some other sales engineer will help greatly, as will also sketching to another a situation that confronts one and getting his recommendation for methods of procedure.

With most individuals success breeds success; if the sales engineer attacks some difficult situation, approaching it from every angle and using every possible resource, the very fact that success comes, or even that he has engaged in a good fight, tends to build up an abundance of confidence for the future.

When we say that an individual has *personality*, we find great difficulty in defining what he possesses that others do not have. Yet, we know perfectly well that two people of apparently equal station in life and intellectual capacity may differ enormously in their ability to attract and hold attention.

Each one of us has a personality of his own, which never should be destroyed but rather developed and adorned. From this as a

starting point one can improve one's personality by a careful analysis of human qualities, and a cultivation of those that attract and a suppression of those that repel. Much is permanently gained by an improvement in bodily appearance and by methods used in expression if also one's reservoir of facts and sound opinions is correspondingly increased. Personality, however, depends on the extent to which the individual has developed the habit of being interested in others and serving them.

After all, in the field of sales engineering, where success comes through establishing confidence and permanent favorable relationships, personality carries little weight in the long run without the development of character. Superficial attributes which attract individuals soon become recognized simply as stage play, unless supported by character.

In the development of personality through self-expression, the assuming of artificial characteristics is to be discouraged, but the effort, rather, should be to bring out into the open and intensify those desirable characteristics that are natural and already a part of the individual.

So far as personal appearance is concerned, there is not much we can do to change our outline and features. Cleanliness can be practiced, and clothing can be harmonious and unpretentious. Personal habits, physical control, particularly as it concerns speech, silence, and attentiveness, the elimination of objectionable mannerisms, and the retaining, in their natural state, of those that are unobjectionable—all these affect the outward expression of personality and need some consideration. Intensive training in personality development may be essential to the individual who plays his part for a short period and then disappears from the scene, but its application resembles too much a single coat of paint applied to an object that is subjected to considerable wear and tear.

An individual who starts on a program of "making people like him" usually fails, but, on the other hand, if he trains himself in becoming pleasant, trustworthy, and alert to help others as he helps himself, he soon attracts others to him.

Daily Accomplishment

Engineers are especially schooled in scientific procedure, system, motions, and timing applied to production. But too few apply similar principles to their daily work.

In a further study of the four "areas of accomplishment" that we have discussed, we observe that individuals differ greatly in their ability to get things done on account of the degree to which they plan and manage their own efforts efficiently during the hours of work. Strange to say, a subject as important as this is seldom covered formally in any course of educational training but is left largely to the individual to work out for himself. Many mature and capable salesmen could find a way to greater accomplishments by a "time study" of daily procedure.

The salesman's day cannot be always completely planned in advance because he must devote his time not only to those tasks that he knows are to be done but also to those that appear unexpectedly. Certain calls on customers must be made, proposals or quotations prepared, inquiries already received attended to; but unexpected visitors may appear, written or telephone messages may be received, or unforeseen customer difficulties may crop up, all of which must receive attention. Nevertheless, greatest efficiency comes from definitely planning each day's work endeavoring to accomplish what is *laid down for the day* and, in *addition* to this, the unexpected and unforeseen matters.

In examining the operation of two sales engineers in New England who operate together as a manufacturer's representative, we found an excellent system for planned effort. Each at the week end prepares a schedule for the week to follow. Much of the time is spent away from the office, since an efficient secretary handles all details and much of the inside work. In order to advance progressively calls to be made are classified in three ways: those made on active negotiations, those made to follow

up apparatus installed, and those to be made on possible potential prospects. With a schedule made up in advance, there is an urge to do all the duties assigned to a single day with nothing left over.

With accumulated experience, the individual continually increases his efficiency of performance by narrowing his efforts to the essential factors of any undertaking and by increasing his ability to act and to react more promptly. As in any form of progressive action, quick decisions are necessary in determining what to do and how to do it.

The environment of most salesmen is that of a highly organized business enterprise, where functional responsibilities are closely fixed. The salesman therefore must know not only his own responsibilities but also those of others. He must quickly recognize, in connection with every situation as it arises, his responsibilities and the responsibilities of others, and "pass the ball" as well as "receive the ball" promptly and cleanly to and from others within his company at the proper moment. This applies similarly to customer organizations assigned to him. A clear knowledge of their rules of procedure and established systems of operation is also of first importance in giving service rapidly to customers and saving time for the salesman.

To establish some positive points of value, let us see where lost motion in daily procedure occurs. Failure may often be prevented in one of the following ways:

1. By planning the day's work, determining what to do and the proper order of undertaking each item.

One efficient sales engineer utilizes a daily memorandum pad for itemizing, in pencil, his daily program. Each evening, in the light of the previous day and of days to come, he outlines the next day's procedure, dividing what is to be done into visits on customers, people to see in his own office or organization, information to assemble, and communications to send by telephone, telegram, or letter. Some particular items for attention may necessarily be set for some day ahead and inserted on pages available for future days, but the program is made complete for

the following day, in accordance with what he thinks can be, and must be, accomplished in the time.

The sheet for the previous day is torn off and filed away with a very brief note as to what was accomplished, this information being filled in informally under the particular memorandum already made. The whole record is a very simple and brief one, and does not include purely incidental matters, but it has proved very effective in systematizing the work of the man and in helping him review his accomplishments.

Mr. Tell Berna, general manager of the National Machine Tool Builders' Association, speaking recently to a group of sales engineers, emphasized calling on new customers.

Every day the salesman should make some missionary calls as well as calls on live prospects. If possible he should make the missionary calls in the morning and call on the live prospects in the afternoon. You will find that if you do not do it that way, you will call on your live prospects to the exclusion of missionary calls and gradually narrow your field. The constant development of new contacts in a new territory is essential in a country that changes as fast as this one.

2. By establishing habits of doing the numerous ordinary and routine matters in the most effective and efficient way. Only a few simple suggestions can be given here:

Use efficient and polite telephone technique.

When an individual calls at the office or on the phone, understand his name and company representation clearly at the start—usually jot it down.

Before writing a letter itemize in the mind, or even jot down on paper, the important points to cover, in their logical order.

Arrange files of data, correspondence, or useful enclosures so that they are handy.

Keep available an organization chart of your company and a record of individuals whom you must frequently reach in one way or another.

Since the salesman is not an office worker, usually it is best to keep the desk clear of all papers except those applying to the matter in hand.

Do not allow confidential information to be exposed to the view of visitors.

Don't seat your visitor, as a few old-time purchasing agents were in the habit of doing, so that he faces the window and is annoyed by its glare.

Provide ash trays for your guests, and offer the service of your telephone if required.

3. By early setting in motion requests for information or help that require time to obtain, so that it will be available at the proper time in the future to fit in with what is necessary to accomplish a given undertaking.

In negotiating a large and important order, a salesman omitted to get proper approval of the financial credit of his customer from his own treasury officials. He discovered this failure after the order was obtained, and much time and trouble were caused both to himself and his customer in finally establishing the customer's credit for the large purchase.

A sales engineer successfully negotiating equipment for a new power plant knew that one of his company's supervising engineers should inspect the installation before it was to be started. No provision was made for this, and the installation was complete and ready for inspection. Embarrassment was caused and delay occurred because the engineer was working on another job at a distant point at the time he was required by the sales engineer.

The experienced sales engineer continually expands his vision so as to provide the tools that will be required for the future, much as a contractor schedules and provides equipment, step by step, to do the job.

4. By contemplating and providing for requirements or happenings which, though actually unforeseen, might well be taken into calculation.

One sales engineer, some years ago, who represented a small company, had, among other responsibilities, that of providing locally for insurance on shipments into his territory. The matter sometimes escaped his attention, and in one instance a

serious loss by fire occurred for which no provision had been made.

Another sales engineer, negotiating the sale of apparatus with a customer located at a far distant point, did not anticipate any unusual competition in closing the sale. At the last moment, when he was on the ground with the customer, the customer received a competitive bid at a very low price which was most attractive and had to be accepted or rejected by the purchaser in a few hours' time. There was not sufficient time available for the sales engineer to communicate with his headquarters and obtain any revision in price, and without a knowledge of what his company might allow in a price reduction, and without authority in the matter, he was forced to lose the business.

5. By doing things accurately.

The importance of accuracy in matters relating to commercial and technical activities goes without saying. Repeatedly we see cases where some slight error—it may be a dimension or a quoted price—leads to much difficulty.

The Sales Engineer's Relation to His Employer

It is a mistake to consider that the work of the sales engineer consists only in being a connecting link between his superior officer and the customer in producing profitable business. In reality, his work is much broader than this; for he is not only the mouthpiece for the company he represents but also the *ear* through which he learns exact requirements of his customers and interprets their needs to those within his own organization who determine the nature of products and services furnished. His

observations may lead to a redesign of the product he sells, the necessity of new methods in building it, or the adoption of new plans to reach unrecognized markets. His sphere of usefulness is therefore broad, if he keeps in close contact with the technical accomplishments in industry and those individuals directing such activities. His work not only is that of a consultant and particularly an aggressive proponent of new ideas and methods, but also it requires him to be a source of information and a reliable guide to his own organization.

Successful sales engineers are constantly suggesting to design engineers opportunities for improvements that can be made in what is supplied.

One sales engineer, selling equipment for measuring temperature, viscosity, pressure, rate of flow, and other such quantities, found that in selling his products for certain applications certain types of instruments were subject to considerable vibration. In time, the elements that served to mount the instruments failed, and the instruments became loose. In a study of the means of mounting this and other equipment, the sales engineer was able to make suggestions to his headquarters engineering organization which solved the problem by a redesign of the mountings. The result was an actual decrease in cost to the manufacturer besides greater satisfaction of the customers.

Another sales engineer specializing upon arc-welding equipment became singularly successful because he became an authority not only on the equipment he and his competitors sold but also on its use and profit-making possibilities in welding many kinds of materials and shapes. His suggestions and recommendations directed to the designing engineers of his own company proved of inestimable value. He was even able to make an improvement in the method of control employed with welding units when applied for particular operations. He interpreted his customers' problems to these designing engineers, their difficulties, their likes and dislikes, and the improvements later incorporated in redesigns which made the equipment more acceptable to users were largely the fruits of his initiative.

Still another sales engineer selling machine tools continually asked his purchasers, after they had bought tools and used them,

whether they felt that any improvements could be made in the equipment. He kept a careful record of these suggestions over a period of time, tabulating them so that he would have a complete record. They varied in type from the suggestion that the operating levers be rearranged so that they would cause less interference and obstruction, to the matter of improved external finish of the machine. Some suggestions were repeated by different users. After several months, he visited the headquarters of his company and had a helpful picture to present to both the chief design engineer and the factory superintendent, which enabled them to make changes which definitely improved the usefulness and acceptability of the machine tools that were furnished.

Since the sales engineer is the ear of his company in its relations with customers, in addition to being its mouthpiece, he should be in the best position to learn quickly what occurs in the industrial market, both matters of a technical nature and happenings and trends of a commercial nature. His observation of market changes and competitive activities, if accurate and furnished promptly to his home office, assists sales management materially in adopting new and agggressive sales policies and programs.

Any intelligent sales engineer realizes that the responsibilities of sales management today are most exacting. One of the important ways in which the sales engineer can earn a position within his own organization is to be constantly watchful for ideas and information that will assist his superior officer in improving sales methods and sales plans.

The work of the sales engineer is greatly influenced by the relations that exist between him and his sales manager or district manager.

In some organizations we find friction between the sales engineer and his sales manager. In part, at least, it may be due to a lack of understanding of the sales manager's duties and responsibilities. The job of any sales manager is not easy. Though his work involves directing a sales organization, it also includes dealing harmoniously with other officials, such as those in charge of design, production, purchasing, and finance. Not only must he lead and inspire his sales organization to produce a larger profit-

able sales volume but also he must sell such officials as these the importance of adequately serving a market in the way it likes to be served. He distinctly has the job of educating his own headquarters organization and of making others commercially minded.

Such weaknesses as these are sometimes characteristic of the sales engineer in his relations with his sales manager:

The sales engineer may fail to appreciate that his sales manager has to base his operations upon market and sales operational facts. Furnishing facts and making out reports may appear useless to him, and their preparation burdensome.

When the sales manager visits his territory the sales engineer may guide him to call only on those customers who are most friendly, thus attempting to give his superior a false notion of his acceptance.

On the other hand, the sales engineer may choose to steer him only to those customers who are in trouble, thus trying to illustrate how difficult the selling job is.

The most successful sales managers do not drive, but lead. In working with the sales engineer they draw a happy line between strict supervision and friendly support.

A few years ago a young sales engineer in Connecticut developed a large negotiation for machinery with a metal-working plant. Its size and importance were staggering. As the job reached the point of closing, he called up the district manager and asked him to be on hand the following day to help him get the contract signed. The district manager readily agreed.

The next morning these two men spent an hour reviewing every aspect of the job and every step taken by the sales engineer. Each step in selling had been well covered, and the young sales engineer had his feet on the ground. They drove to the prospect's plant. "Come on," said the young sales engineer as he jumped out of the car. "Let's see if we can't get the contract signed." "No," said the district manager, "I'll wait for you here in the car. If you need me, I'll be here."

A half-hour passed. Then the sales engineer returned smiling and holding the signed contract.

This is one of the best examples of clever sales management. It is hardly necessary to point out what this method of handling did to build up the confidence and strength of the sales engineer.

An intimate and friendly relationship between manager and sales engineer, each with respect for the other, goes far to build business.

Entertaining Customers

Entertainment of prospects and customers is very common. It is a topic often avoided, evidently because it extends into the realm of moral conduct.

It is fortunate that present day business relationships are to a considerable degree based upon friendship. Friendships are formed through opportunities of fellowship. Such opportunities make it possible for the sales engineer and the customer to know each other better. Entertainment, therefore, is desirable and justified.

The question is the character and extent of entertainment. Evils come from extremes. Lavish and vulgar entertainment may ultimately destroy friendship; likewise entertainment that is niggardly, drab or meaningless. Fortunately over the years the general character of entertainment has improved. It has come to be regarded as creating a pleasant atmosphere in which to generate fellowship, become better acquainted, and do business, rather than a method of "buying" an order.

Suppose, for instance, the sales engineer had obtained a large contract for an assembly of equipment, and a group of related individuals had the job of building and installing the equipment. What better means could be employed to get the group to plan to work as a team than some sensible form of diversion?

Such rules as these, I believe, should govern all entertaining.

No entertainment can be considered right if it departs from the main purpose of fellowship and a chance to interchange ideas.

Entertainment should have character. It should be in keeping with the occasion and conducted on a level of decency.

Entertainment should be done well but not lavishly. No entertainment is much better than a poor form of entertainment.

Presents to customers are entirely out of place, unless in the form of a low-priced remembrance that has personal meaning.

Paying the expenses of prospect or customer for extended trips or for services not really rendered constitutes a form of bribery and is reprehensible.

Entertainment for a group of individuals should be well planned in advance. The sales engineer may be called on, for instance, to make the complete arrangements for a lunch or a dinner. Every detail must be properly attended to. Let us imagine that the sales engineer has a number of officials from his headquarters visiting his territory, and a dinner is to be arranged with a group of his important prospects and customers. Such points as these should never be neglected.

Establish a suitable time and place which will provide privacy and attractive surroundings.

Exercise great care in the selection of guests, considering particularly if they will be congenial and if their presence will further useful business relationships.

Try to get the invitations out well in advance. Often several cannot attend owing to other engagements, yet the invitation itself is a valuable gesture to those who cannot attend.

If possible seat each guest so that he will have a congenial person located next to him, and the two will have a common interest.

Long after-dinner talks are increasingly unpopular. Often a word of welcome or greeting from a member of the sales engineer's company and a representative of the local group of guests is sufficient. If there is to be a presentation of your company as an institution, make it brief, entertaining, and focused upon the interest of the guests.

Above all, don't allow the after-dinner program to drift into

pointless discussion. Close any affair of this kind, if possible, with a climax.

Introducing any pointed selling arguments or exercising sales pressure upon your guests usually does much more harm than good.

Character and surroundings count for much in any form of entertainment. Fellowship and personality add more than anything else to what is offered.

The most enjoyable and fitting entertainment I can remember occurred in the summer at a simple camp maintained by our host on the banks of a little lake in Massachusetts. Our party, including a group from headquarters, was driven to the lake in the late afternoon. The host, who was head of the company we called upon, had left the plant early to complete the arrangements himself. He was at the camp when we arrived—sleeves rolled up, preparing the meal. There were refreshments, steaks, French fries, and the trimmings. Each had been selected personally by our host. He cooked the food, served the guests, and then joined us at the head of the table.

The Sales Engineer as a Public Speaker

The experienced sales engineer is well equipped to talk to one person or a few persons who have a potential interest in the subject in hand. Only occasionally, however, is he skilled in presenting a subject to a formidable group.

It is unnecessary for the sales engineer to attempt to become a finished platform orator. Yet there is a distinct advantage in being able to address a gathering successfully. He extends his influence by doing so. He gains recognition for himself, his

work, and his employer. He performs a helpful service for others.

No attempt is made here to give instruction in the art of public speaking—only certain basic suggestions that may have value are given.

A good talk is one that registers in the minds of the listeners interesting and valuable ideas. The ideas themselves must have value, but, to become real to the audience and invite action, they must be presented or clothed in such a way as to appeal to the particular group of listeners. If you ask some acquaintance after a meeting what a certain speaker said, he will usually mention only one or at most two points that registered on his mind. But he will invariably tell you whether or not he enjoyed the talk—whether it was interesting.

Thus any successful talk depends on ideas and also on the way in which these ideas are presented. Repeatedly the initial speaker within a group expresses an idea that falls flat because it is not expressed with clarity and conviction. Another, coming later, may express this same idea so well that the group gives him credit for its origin.

Many talks or technical papers presented by engineers are crowded with ideas. The engineer absorbed in his own subject is inclined to assume that the average listener has a deep interest in it and is sufficiently informed to grasp quickly the thoughts he expresses. Ordinarily the speaker would make a more lasting impression upon his audience if he selected fewer ideas and clothed each one of his presentations with color, human interest, and the elements of drama.

A talk, to be successful, usually pursues the following course:

The importance of the subject is established. Often some interesting incident or illustration is used to gain initial attention.

Facts relating to past, present, and future conditions are presented and problems are posed.

Possible methods of solution are offered and illustrated.

The substance of the message is summarized with an appeal for future action.

Every talk, therefore, must be planned in outline form. Facts must be gathered, evaluated, and arranged in relation to both the

subject and the particular interests of the audience. More experienced speakers can simply follow an outline; others find it best to write out every word.

The following suggestions may be helpful:

Study carefully the opening and the closing of the talk. Both the opening and the closing impressions count for much.

Avoid apologies; they add nothing and usually detract.

Be sure to speak loud enough so that all can hear. Avoid monotony and practice contrast.

Cultivate an unhurried manner and gait. Pause long enough so that important ideas and conclusions will sink home.

Give the talk color. Homely apt illustrations or personal references that are inoffensive add greatly.

Avoid "talking down" to the audience. Establish yourself on its level.

Some speakers lack "terminal" facilities. It is a very common error for a speaker to reach a climax and capture his audience, then continue to talk, and destroy the value and the effect of what has been said.

Always face the audience and, even though reading a paper, lift the eyes frequently and direct them to those listening.

A pleasant manner and touches of humor help to assure a pleasant reception.

In many talks before technical groups, charts, lantern slides, or visual aids are effectively used. It is a common error to prepare these so that they cannot be read by all those at a distance. Many speakers make the mistake of arranging these charts so that they are visible before they are to be used, thus distracting attention from the speaker. The speaker, familiar with his own material, often fails to realize that it may be new to the audience. Each chart or slide should be carefully explained, and sufficient time should be given for the audience to grasp its purpose and meaning.

The young sales engineer, lacking an invitation to speak to a group, may wonder how he can develop his ability. Many short courses in public speaking are well worth taking. There are many opportunities at technical or other gatherings to ask questions or

take part in discussion. Taking a minor part in such meetings gives experience in thinking on your feet. Much can be learned by listening to other speakers and acquiring the habit of critically studying each talk that is given.

Recognizing Values and Keeping on the Track

Tracing the careers of a large number of sales engineers shows that many of them reach a peak of accomplishment rather early in life. This is more often true of sales engineers employed by the larger corporations than of those operating independently as manufacturers' representatives.

In analyzing other causes than those named for these stoppages in progress and growth, we find that the sales engineer's attention and interests may be diverted. He may switch to some sidetrack of interest that leads nowhere.

Sidetracks that sales engineers are inclined to follow are numerous. The commonest are these:

One sales engineer may become engrossed in a sport or pastime that he carries to excess. Golf, for instance, is an excellent exercise and pastime. It provides an opportunity to meet people under informal circumstances and to extend and cement friendships. However, it can be carried to excess, and the sales engineer attempts to justify its value in a business way simply because he himself is enraptured with it.

Another sales engineer becomes absorbed in cocktail parties and night life. He stresses how valuable they are in getting close to his customers. Before long his health is affected, and he depends more and more upon friendships alone as a reason for getting and

retaining incoming business. He brags of his closeness to his customers and those who influence business. He forgets that many of his friends are true to him only as long as his pocketbook remains full. He forgets, also, that, in spite of the value of friendship, permanent business rests largely on service rendered and that customer personnel frequently changes.

Still another sales engineer gets sidetracked because he becomes so absorbed in technical matters. He collects and arranges engineering data more for enjoyment than for its use in selling. He becomes a moving encyclopedia, or what has been called a "technical dope fiend." His value as a collector replaces that of an aggressive business getter.

Again, many sales engineers become extremely lax in operating systematically. They come to feel that with friendship established and orders obtained, they have reached a point at which it is beneath them to bother with details and pay the necessary attention to following through. Sales enthusiasm is built largely on emotion, but, when this is not supported and followed by a systematic method of procedure, only scattered results ensue.

Repeatedly we find salesmen whose interests and efforts change from day to day. They jump from one brilliant idea to another. They may apply themselves with concentration for a time, but with no continuing persistence to get final results in an orderly way.

Such weaknesses, or the following of such sidetracks, never develop suddenly. Each has a history. Only by frequently evaluating one's efforts can they be avoided. Without being too introspective, the sales engineer who can examine himself, revaluate his work fairly, and employ self-corrective guidance is truly one who will progress.

We approach a period in industrial development in which the sales engineer and his work will, to a large degree, govern business progress and the maintenance of production. His efforts and his advice will go forward determining the extent and character to which our national resources are invested in productive equipment. In the public's mind his work is largely misunderstood. Bearing the title "salesman," he is at once associated with high-pressure merchandising. Everyone knows what a merchandise

salesman does, but few differentiate his work from that of the sales engineer. The future will call for a continually higher degree of professional skill in this profession, as well as a clearer understanding of the character and importance of the work of the sales engineer.

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